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HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS
AND DESIGNATIONS. VOLUME I. TITANIUM

BATTELLE COLUMBUS LABORATORIES, OHIO

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In addition to equating chemical compositions of the world's titanium alloys, the handbook relates compositions to product forms, standards, producing companies, alloy types, common names, and applications, and it also lists some basic physical and mechanical properties for the better-known alloys.

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MCIC-HB-09

Volume I

**HANDBOOK OF INTERNATIONAL ALLOY
COMPOSITIONS AND DESIGNATIONS
VOLUME I - TITANIUM**



Metals and Ceramics Information Center

Battelle
Columbus Laboratories
505 King Avenue
Columbus, Ohio 43201

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**HANDBOOK OF INTERNATIONAL ALLOY
COMPOSITIONS AND DESIGNATIONS**

VOLUME I

TITANIUM

H. Hucek

M. Wahll

November 1976

METALS AND CERAMICS INFORMATION CENTER

BATTELLE

Columbus Laboratories

505 King Avenue

Columbus, Ohio 43201

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FOREWORD

This handbook is the first of a series intended to cover all metals and alloys that are available internationally.

The overall objective is to provide reference books to establish the chemical composition and similarities of the wide variety of alloy designations for metals and alloys in use throughout the modern world. Through the use of an alphanumeric alloy index, the user may quickly locate a specific alloy composition and other relevant property data for this material, or he may search for a general or particular alloy system.

The handbook is organized in a manner to clearly show the relationship of alloys and standards of one country with similar alloys and standards of other countries. The information presented is for guidance purposes only. This handbook is not intended to be used as a reference in purchase specifications, nor should it be used to supersede any standards or specifications. Under no circumstances should this handbook be taken as an authority to use material in lieu of the designers specifications. It may, however, aid in selecting alternative materials.

The prevalent use of the English units system in the U.S. and the metric units system in Europe necessitates the use of both systems in this edition. It is hoped the U.S. conversion to the (SI) International System of Units⁽³⁸⁾ in the metric system will be rapid. The conversion to SI is progressing rapidly in Europe.

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HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS AND DESIGNATIONS

VOLUME I - TITANIUM

ABSTRACT

This handbook was compiled from data collected from many sources in an effort to bridge the nomenclature gap on titanium materials produced and used in various countries of the world. Its primary purpose and emphasis is to conveniently interrelate the alloy designations and standards of one country with the alloy designations, compositions, and standards of other countries for titanium materials.

In addition to equating chemical compositions of the world's titanium alloys, the handbook relates compositions to product forms, standards, producing companies, alloy types, common names, and applications, and it also lists some basic physical and mechanical properties for the better-known alloys.

INTRODUCTION

Increasing commercial trade, military cooperation, and technical exchange between countries in recent years has made it imperative to be able to use metallic products produced in different countries interchangeably. Unfortunately, it is often extremely difficult to determine which alloys produced in one country are equivalent to or approximately equivalent to alloys produced in another country. This information, where available, is often located in separate documents which are difficult to obtain. Hence, direct alloy comparisons on an international level usually entail a considerable effort. To bridge this information gap, the Metals and Ceramics Information Center (MCIC) plans to prepare and publish a series of international handbooks each devoted to one or more of the world's major metals.

As a starting point for this international alloy handbook series, MCIC selected titanium and titanium alloys as representing a relatively new metal for which relatively few references are available as references to for pertinent compositions, applicable standards, and specifications on an international basis.

Another reason for selecting titanium and its alloys was to capitalize on the excellent recent work by the 1975 European Technical Committee on titanium materials. This group, consisting of four leading European titanium producers, was organized to discuss available knowledge and experience among themselves with the aim of formulating joint standardization proposals. The four member companies are: Contimet, Titanium Division of Thyssen Edelstahlwerke AG, Krefeld, Germany; Fried. Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, Germany; Imperial Metal Industries Ltd. (Kynoch), New Metals Division, Birmingham, England; and Pechiney Ugine Kuhlman (PUG), Ugine Aciers, Paris, France.

The results of the European technical committee work are found in a trilingual publication, "Technical Supply Conditions for Semi-fabricated Products of Titanium and Titanium Alloys".⁽¹⁾ Their report was compiled with the object of providing European producers and users with a generally valid basis and guidelines for everyday work with titanium and its alloys. The report includes product definitions and heat-treatment conditions together with type and frequency of chemical analysis, mechanical property tests, and ultrasonic tests.

To supplement the coordinated start by the European prime titanium producers Technical Committee, MCIC visualized a still broader need for a cross index of worldwide titanium alloy designations with their respective chemical composition and equivalents. A preliminary MCIC feasibility and market study confirmed the need for an alloy composition reference book(s) covering all metals.⁽⁵⁶⁾ The result of this effort is this International Titanium Alloy Handbook.

GENERAL CONSIDERATIONS OF TITANIUM AND TITANIUM ALLOYS

Physical and Metallurgical Characteristics

Table A⁽⁴⁵⁾ compares some selected physical properties of pure titanium with those of four other pure metals (aluminum, iron, magnesium, and copper).

Titanium is about 40 percent lighter than steel. However, certain titanium alloys can be equated on a strength-to-weight basis to steels having yield-strength levels of about 300 ksi (2,068 MN/m²). Titanium alloys are 60 percent heavier than aluminum and are much stronger, useful to much higher temperatures, show higher fatigue strengths, and greater hardness than aluminum alloys. A wide range of physical and mechanical properties are available from titanium and its alloys.

Titanium and titanium alloys are used in engineering design primarily for their excellent combination of mechanical properties, corrosion resistance, and low density. Other advantages of titanium for specific applications include low magnetic permeability, good toughness characteristics, and low hardening temperatures in heat treating. Alloying improves the properties of commercially pure titanium, and many titanium alloys can be further strengthened by heat treatment.

Each element that might combine with titanium either intentionally or unintentionally, results in some change in the basic crystal structure. In this sense, even the commercial unalloyed grades of titanium are alloys, since each of the grades contains various quantities of impurity elements. Examples of the impurity or alloying quantities permitted in the various unalloyed grades of titanium per public specifications in the U.S. are shown below.

Grade	Maximum or Range, ppm				
	C	O ₂	N ₂	H ₂	Fe
1	300	1000	120	50	1000
2	500	1000	200	80	2000
3	500	1000-1500	200	80	2000
4	500	1500-2500	200	80	3000

TABLE A. PHYSICAL PROPERTIES OF TITANIUM AND OTHER PURE METALS⁽⁴⁵⁾

Properties	Titanium (99.9%)	Iron (99.9+%)	Aluminum (99.996%)	Magnesium (99.98%)	Copper (99.95%)
Atomic Number	22	26	13	12	29
Atomic Weight (based on Carbon = 12)	47.90	55.85	26.98	24.312	63.54
Density (lb/cu. in) at 68°F (20°C)	0.163	0.284	0.098	0.063	0.323
Liquidus Temperature, °F	3035±18	2797.7±1.8	1220.4	1202	1981.4±0.2
Liquidus Temperature, °C	1668±10	1536.5±1	660.2	650	1083.0±0.1
Transformation Temperature, °F	1625 ^(a)	1670 ^(b)	None	None	None
Magnetic Susceptibility (c)	Para ^(d)	Ferro	Para	Para	Dia
Tensile Modulus, psi x 10 ⁶	14.7	29.7	10.0	6.25	16.0
Shear Modulus, psi x 10 ⁶	5.0	10.0	3.8	2.4	6.0
Thermal Expansion (10 ⁻⁶ in./in./°F at 68°F)	4.67	6.8	13.1	14.0	9.4
Thermal Conductivity (Btu/Hr/ft ² /°F/ft)	9	46	117	56	226
Specific Heat (Btu/lb/°F) at RT	0.126	0.107	0.215	0.246	0.092
Electric Resistivity (microhm-cm at RT)	47.8	10.0	2.824	4.6	1.724
% IACS ^(e)	3.6	17.2	61.1	38.7	100

Note:

- (a) Titanium is hcp at <1625 F and bcc at >1625 F.
 (b) Iron is bcc at <1670 F and fcc between 1670 and 2535 F.
 (c) Paramagnetic = slightly more permeable than a vacuum and independent of magnetizing force.
 Diamagnetic = less permeable than a vacuum and weakly repelled by magnetic force.
 Ferromagnetic = strongly magnetic and dependent of magnetizing force.
 (d) Susceptibility of titanium is 3.17×10^{-6} emu/g. Permeability is 1.00005 at 20 oersteds.
 (e) Percent International Annealed Copper Standard at 20 C. (Measure of electrical conductivity)

These impurity levels control the strength of the unalloyed grades which varies from 25 to 70 ksi (172 to 483 MN/m²) minimum yield strength in Grades 1 to 4. In addition, one U.S. producer (TMCA) makes another grade with higher impurity content and a still higher tensile yield strength.

A second important alloying effect is the change induced in the polymorphous transformation temperature of the crystal structure. For pure titanium, the transformation temperature is about 1625 F (885 C). Below this temperature the metal atoms occupy a hexagonal-close-packed (hcp) structure which is designated as the alpha phase. Above this temperature the alpha phase changes to a body-centered-cubic (bcc) structure which is called the beta phase.

The interstitial elements, carbon, oxygen, and nitrogen, and the metal aluminum, are examples of elements that raise the transformation temperature (so called alpha-phase stabilizers); all other elements lower it in varying amounts (beta stabilizers). Iron, vanadium, chromium, molybdenum, and manganese are elements that markedly lower the transformation temperature. Zirconium and tin lower it only slightly. The amount of the elements added to titanium also affects the extent of change. The ability of elements to distort the crystal structure of titanium to cause strengthening or changes in the phase transformation behavior varies from element to element and is the basis of titanium alloy metallurgy.

The alpha- and beta-phase stabilizing elements for titanium, when added either singly or in any combination, tend to strengthen the base structure and to promote other mechanical, physical, and metallurgical characteristics as well as to control basic microstructure. Alloys may be selected for applications based on the combinations of desired characteristics. For example, an alpha alloy might be selected for its high creep strength at elevated temperatures. One would not choose a beta alloy for this requirement. A beta alloy might be selected for ease of fabricability in manufacturing a part with a complex contour. Generally, alpha + beta alloys are a good choice when combinations of properties are desired.

The mechanical properties of a given alpha + beta alloy are quite dependent on the relative amounts of each of the phases present. This, in turn, is a function of temperature as well as composition. Thus, the properties of titanium alloys in general, and of alpha + beta and beta alloys in particular, are dependent on their thermal history and heat treatments. The inter-relationship of mechanical properties with variables in composition and structure is very complex and is regarded as outside the scope of this handbook. Accordingly, no attempt has been made to discuss any details of heat treatment for titanium and its alloys.

Availability and Designations of Titanium Alloys

More than 100 titanium alloys have been offered commercially since the start of the titanium industry. The substitution of modified compositions for some of the earlier alloys, the elimination of a few, and the continual introduction of new alloys has tended to maintain the compositions available to users somewhat lower than 100. For example, about 30 compositions are available commercially from U.S. producers, 40 in the U.S.S.R., about a dozen in the U.K., and 5 or 6 from French, German, and Japanese producers. The totals include various grades of unalloyed titanium and selected alloys. Also, several basic compositions (e.g., Ti-5Al-2.5Sn and Ti-6Al-4V) are common to more than one country. Although a wide variety of alloys is available, some compositions are rarely used even though they are offered.

A few compositions offered constitute the most used titanium alloys and grades. Those most used in the United States for more than a decade are apparent from the following shipments tabulation.

Composition	Percent of Total Shipments in U.S.		
	1961	1971	1973
Ti-6Al-4V	45	56	57
Unalloyed Ti grades	16	19	22
Ti-5Al-2.5Sn	15	7	6
Ti-6Al-6V-2Sn	2	7	9
Ti-8Mn	10	2	1
Ti-13V-11Cr-3Al	10	1	<1
Ti-8Al-1Mo-1V	1	3	2
Ti-6Al-2Sn-4Zr-2Mo	N/A	3	2
Other	2	3	<1

Foreign use patterns are unknown (shipments), but it is strongly believed that the Ti-6Al-4V alloy would be one of the most used. The dominance of the Ti-6Al-4V alloy in U.S. applications is obvious from the above data. Each of the other producing countries makes the Ti-6Al-4V grade--designated IMI-318 in the U.K.; as VT6 in the U.S.S.R.; T-A6V in France; and Contimet AIV 64, Krupp Tikrutan LT 31, LW 3.7164, and DIN 3.7165 in Germany. This alloy is also widely used in nonproducing countries as well. The continued dominance of the Ti-6Al-4V alloy and the several grades of unalloyed titanium is expected. The Ti-6Al-4V is a versatile and dependable alloy and, perhaps most importantly, a vast data base is available for this composition in a wide variety of conditions and circumstances. These conditions tend to persuade prior users of the material to continue using it, and new users to select it.

The compositions offered commercially are of three basic metallurgical types. Classification of alloys in terms of the predominant crystal structure, alpha, alpha + beta, and beta is commonly used for alloy typing. There are variations of the predominant crystal structures (e.g., alpha-dispersoid structure), but the alpha or the beta forms are found separately or mixed in each commercial titanium base alloy. Generally, each alloy has some unique property or combination of properties to permit its continued offering and application.

The titanium alloys offered by the U.S. producers are listed in Table 1E (page 82) with an alloy-type classification name according to the above system. A common name is also shown for most of the compositions. The product forms available for these alloys are also shown in Table 1E. The company designation for these materials frequently includes a company identification symbol or name; for example, Armco Ti-6Al-4V for the Armco Steel Corporation brand of this alloy or Rm-6Al-4V for the RM Company product, and MMA-9744 for the Martin Marietta Aluminum Company brand of Ti-6Al-2Sn-4Zr-2Mo alloy. Other producers use meaningful symbols for designations; e.g., Crucible uses the prefix A for alpha, B for beta, C for alpha-beta, plus a number representing a minimum tensile yield strength and a suffix for kind of alloy addition; thus, A-110AT for Ti-5Al-2.5Sn and C-120AV for Ti-6Al-4V. The largest U.S. titanium producer, Titanium Metals Corporation of America (TMCA), uses only the nominal composition to designate their products. The scheme of the designation system for U.S. alloys by companies is apparent from the listings of Table 1E.1. This table also reveals which alloys are offered by some of the major companies, although it should be recognized that this is an incomplete listing. Designations for U.S. titanium welding rods and electrodes are shown in Table 1E.2, the welding rod and electrode compositions are specified by the American Welding Society.

The designation systems used by non-U.S. companies for titanium materials seem to be somewhat similar to those used in the U.S., knowledge of alloys and designations from several foreign sources is still incomplete. For example, the IMI prefix to the designations of alloys offered in the U.K. consists of the initials of the producer, Imperial Metal Industries Ltd. Similarly, the designation prefixes of Soviet compositions refer to the institute that developed the alloys. For example, VT 20 refers to VIAM-developed titanium alloy (VIAM is the acronym for the All Union Institute of Aviation Materials). Table 1F.1 gives the U.K. or British designations, Table 1F.2 the French Designations, 1F.3 the German designations, 1F.4 the Soviet designations, 1F.5 the Czechoslovakian designations, 1F.6 the Japanese designations, 1F.7 the Spanish (proposed) designations, and 1F.8 the ISO (International Standards Organization) (proposed) designations.

Less information is available from some of the other countries dealing in titanium products. It is known, however, that the bulk of the Japanese titanium business is in unalloyed titanium grades and that the grade designations reflect their purity and, therefore, strength level. For example, Kobe Steel Company titanium grades are designated KS-50 and KS-70 while Sumitomo Light Metal Industries (later Nippon Stainless Steel Company) grades were ST-40, ST-50, ST-60, ST-70, and ST-80. Numbers in these designations refer to tensile yield strength minimums and, therefore, indirectly to purity level. Japan markets titanium alloys and sponge on a wide international basis.

The French designation system is based on a letter and number coding plan that gives the major constituents and their quantity in the alloys, but ignores quantifying minor elements. For example, T-A5E is the designation for Ti-5Al-2.5Sn. Other French designations are as follows:

<u>Composition</u>	<u>Designation</u>	<u>Composition</u>	<u>Designation</u>
Ti-8Al-1Mo-1V	T-A8DV	Ti-13V-11Cr-3Al	T-V13CA
Ti-4Al-4Mn	T-A4M	Ti-6Al-2Sn-4Zr-2Mo	T-A6Zr4DE
Ti-4Al-3Mo-1V	T-A4D3V	Ti-6Al-5Zr-1W-0.2Si	T-A6AZ5W
Ti-6Al-4V	T-A6V	Ti-6Al-5Zr-0.5Mo-0.2Si	T-A6Zr5D
Ti-7Al-4Mo	T-A7D	Ti-6Al-4V-3Co	T-A6V4K3

Unalloyed titanium grades, e.g., T-35, T-40, T-50, and T-60, indicate yield strength in the same way that several other countries designate unalloyed grades. The Germans and French usually express the nominal compositions with quantity following the element symbol. This is the reverse of the U.S. and U.K. practice where the quantity precedes the element symbol; for example:

<u>U.S. Format</u>	<u>German Format</u>
Ti-6Al-4V	Ti-Al6-V4
Ti-6Al-6V-2Sn	Ti-Al6-V6-Sn2
Ti-4Al-4Mo-2Sn	Ti-Al4-Mo4-Sn2
Ti-8Al-1Mo-1V	Ti-Al8-Mo1-V1
Ti-2Cu	Ti-Cu2
Ti-5Al-2.5Sn	Ti-Al5-Sn2.5

STRUCTURE AND FORMAT OF THE TITANIUM ALLOY HANDBOOK

Data Acquisition

Data for this handbook were obtained from 89 references which are listed on pages 129-138. In addition to the usual publications and standards available in the MCIC files and the Battelle-Columbus library, MCIC relied on personal contacts with selected producers and users, both in the U.S. and Europe, to obtain some of the special documents used in this data compilation.

Computerized Format of Nominal Compositions

A computer and a special alphanumeric nomenclature were used as aids in methodically sorting and classifying alloy compositions. To familiarize the user, the computerized alphanumeric format is compared with the more conventional alloy format in Table 1A (page 60).

Note that in the computerized format the elements are arranged in a descending order of their alloying importance in titanium; e.g., Al, V, Mo, Sn, Zr, Mn, Cr, Fe, Cu, Pd, Cb/Nb, and others. The quantity of the element follows the element symbol instead of preceding it. When the quantity of an element is 10 percent or greater a blank space is left after the element symbol so the computer can order it into the 10, 20, or 30 range, etc. This change in nominal composition format permits a methodical approach to bringing all alloys of similar composition together by mechanical computer sorting, and thus provides a common denominator for alloys of any country. For proper sorting it is essential that the nominal formats always be consistent.

To cope with the controversially different names and symbols used for one element, e.g., Cb for columbium and Nb for niobium, the combined symbol (Cb/Nb) is used in the computerized format.

Handbook Structure

The handbook is structured so that the user can readily obtain information about titanium alloys in a number of ways. The various tables and appendixes are shown in the Table of Contents. A synopsis is given in the paragraphs which follow.

Detailed Chemical Composition

Table 1 is the basic table of the handbook wherein the detailed chemical composition of each alloy designation is given. It also indicates company, country, alloy type, forms available, and some alloy applications. Table 1 is arranged so that alloys of similar composition are grouped together.

Alloy Index

The entry or "key" to Table 1 is the Alloy Index found following the Appendixes. This index, arranged alphanumerically, shows the specific line (index number) where the alloy is listed in Table 1.

Physical and Mechanical Properties and Equivalent Alloys Standards

Most of the nominal compositions in the total collection reduce to 112, shown in Tables 1B, 1C, and 1D. The minimum physical properties of some of these 112 alloys are given in Table 1B in English and SI units, and the minimum mechanical properties are given in Table 1C. The same 112 alloys are correlated with pertinent national standards, alloy equivalents, and UNS (Unified Numbering System) designations in Table 1D. Where possible, the U.S., British, French, German and other national standards, and selected applications of the alloy, are shown.

Typical U.S. Titanium Alloys

The typical alloys used in the U.S. are given in Table 1E. The correlation of typical U.S. titanium alloys by company^(45,57) are shown in Table 1E.2.

Typical Non-U.S. Titanium Alloys

The typical non-U.S. alloys of commercial interest are shown in Table 1F. The following subtables show the titanium alloys for United Kingdom, France, Germany, U.S.S.R., Czechoslovakia, Japan, Spain, and ISO, International Standards Organization Alloys.

Table 1F.1	United Kingdom alloys
Table 1F.2	French alloys
Table 1F.3	German alloys
Table 1F.4	Soviet alloys
Table 1F.5	Czechoslovakian alloys
Table 1F.6	Japanese alloys
Table 1F.7	Spanish alloys (proposed)
Table 1F.8	ISO alloys (proposed)

Current U.S. Titanium Standards and Specifications

Listing of current U.S. Titanium Standards or specifications, Aerospace Material Specifications, American Society for Testing and Materials Standard Specifications, U.S. Military Standards, and American Welding Society Standards are given in Tables 1G, 1I, 1K, and 1M.

Table 1G	Shows the current AMS standards
Table 1I	Shows the current ASTM standards
Table 1K	Shows the current U.S. Military standards
Table 1M	Shows the American Welding Society standards.

Correlation of U.S. Alloy Standards

Table 1H	Correlation of AMS compositions with AMS product form specifications
Table 1J	Correlation of ASTM standards specifications with titanium alloy compositions
Table 1K	Current U.S. Military specifications covering titanium and titanium alloys
Table 1L	Correlation of U.S. Military specifications, forms with titanium alloy compositions

Titanium Sponge Characteristics

The titanium sponge compositions are shown in Table 1N. Availability, economics, and usage of titanium sponge are discussed in detail in "The Titanium Industry in the Mid-70's"⁽⁵⁷⁾.

Foreign Titanium Standards

Foreign Current Titanium Standards numbers and titles of titanium alloys are listed in the following tables:

Table 1O	British standards
Table 1P	French standards and AECMA standards
Table 1Q	German standards
Table 1R	Soviet standards
Table 1S	Czechoslovakian standards
Table 1T	Japanese standards
Table 1U	ISO standards (proposed)
Table 1V	Spanish standards (proposed)
Table 1W	Other current U.S. standards.

The current standards of these various countries are compared by national standards and composition in Appendixes 7 and 8, respectively. Older standards are listed in Appendix 6, names and addresses of organizations generating these standards are shown in Appendix 5.

Company and Country Codes

The Country Code relationships are shown in Appendix 1. The Company Code numerical relationship is shown in Appendix 2, and the Company Code alphabetical order is shown in Appendix 3.

Foreign Current Titanium Standards numbers and titles of titanium alloys are listed in the following Unified Numbering System

The Unified Numbering System (UNS) is being developed jointly by the U.S. Society of Automotive Engineers (SAE) and the American Society for Testing and Materials (ASTM). Ultimately, UNS is intended to provide a means of "correlating many nationally (North America) used numbering systems currently administered by societies, trade associations, and individual users and producers of metals and alloys"⁽³⁴⁾. In its publication, the UNS has established a schematic system for 15 series of numbers representing 15 groups of metals and alloys. Each UNS number consists of a

single letter prefix followed by five digits. For example, the UNS Number AXXXXX designates a group consisting of aluminum and aluminum alloys.

In this initial compilation, titanium and its alloys were not identified as a specific group but rather were included under UNS Number RXXXXX which designates an alloy group consisting of "Reactive and Refractory Metals and Alloys". Subsequently, the Chairman of the UNS Joint Committee has furnished MCIC with the UNS titanium numbers that will be included in the next edition of the Unified Numbering System catalog for metals and alloys. The UNS numbers presently assigned titanium and titanium alloys are shown in Appendix 4. Note that relatively few commercial alloys have been assigned UNS numbers. The titanium alloys and unalloyed titanium selected for numbering are given three numbers depending upon the hydrogen level.

British Titanium Data

Appendixes 9, 9.1, and 9.2 were compiled and furnished by Imperial Metal Industries Ltd., New Metals Division (Kynoch), Birmingham, England.

Appendix 9 correlates the British Standards (Aerospace Series) and DTD (Ministry of Defence) with the respective IMI alloy numbers,⁽⁶⁾ with the nominal composition, forms available, and pertinent mechanical properties.

Appendix 9.1 correlates IMI alloy numbers⁽⁷⁾ with numerous international standards and specifications. The correlation includes the following standards: British Standards (Aerospace Series) and British Standards (Codes of Practice Series), DTD (Ministry of Defence Specifications); European AEMCA (Association European Constructeurs de Material Aerospace); French AIR (Reglements AIR); German LW, B.W.B. or LN (Luftfahrt Werkstoffe Specifications); DIN (Deutsche Normen); TUV (Vereinigung der Technischer Uberwachungs Vereine EV); United States AMS (Aerospace Material Specifications); US Military Specifications; and ASTM (American Society for Testing and Materials). The forms covered by the specifications are also indicated in this correlation.

Appendix 9.2 summarizes application and usage patterns for various British IMI titanium and titanium alloys in four sections:

Section A relates to the general chemical plant corrosion situations as well as environments, type of plant, and reasons for alloy usage,

Section B relates to general and engineering applications of commercially pure titanium,

Section C indicates some applications for titanium alloys (IMI numbers) and reasons for alloy usage,

Section D indicates various applications for titanium and titanium alloys (IMI numbers) in Aerospace Engineering.

German Titanium Data

The Appendixes 10, 10.1, and 10.2 were compiled and furnished by Fried. Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, West Germany.

Appendix 10 correlates the Krupp Tikrutan titanium and titanium alloy designations with various international standards and alloy designations including U.S., West Germany, England, France, European, Soviet, and East Germany.⁽²¹⁾ The second portion of Appendix 10 relates the Krupp Tikrutan alloy designations with the German brief alloy designations, aircraft material standards, AECMA standards, shaping methods and dimensions.⁽²³⁾

Appendix 10.1 includes a number of Krupp tables. Table 1 shows the chemical composition of the commercially pure titanium designations; Krupp Table 4 shows the chemical composition of the Tikrutan alloy designations. Table 2 shows the physical properties of commercially pure titanium; Table 5 shows the physical properties of Tikrutan alloys. Table 3 shows the mechanical properties of commercially pure titanium; Table 6 shows the mechanical properties of Tikrutan alloys.⁽²⁰⁾

Appendixes 11 and 11.1 were compiled by Contimet Titanium Division of Thyssen Edelstahlwerke AG, Krefeld, West Germany. Appendix 11.1 correlates the Contimet titanium alloy number (Contimet Table 2) with various international standards and alloy numbers including West German standards and specifications, Great Britain standards and specifications, French standards and specifications, European standards, and U.S. standards. Table 1 shows their mill processing and forms available by alloys; Table 3 shows their alloy chemical compositions; Table 4 shows the physical properties of Contimet alloys; and Tables 5, 6, and 7 show the mechanical properties of Contimet brand alloys.⁽¹⁸⁾

Appendix 12 and its subdivision 12.1 were compiled and furnished by the Otto Fuchs Metallwerke, West Germany. Appendix 12 correlates the Fuchs brand titanium alloy with German, French, and British standards as well as with Contimet, IML, and Krupp alloy numbers. Appendix 12.1 summarizes physical and mechanical properties of the Fuchs titanium alloys.⁽²⁵⁾

Soviet Titanium Data

Appendixes 13 and 13.1, compilations from the 1975 Soviet book, "The Use of Titanium in the National Economy",⁽⁸⁵⁾ shows the chemical compositions of 21 wrought titanium and titanium alloys as well as six titanium and titanium alloy casting materials. The book also shows nine designations and compositions of Soviet titanium sponge.

Appendix 13.1 indicates that the Soviet book⁽⁸⁵⁾ contains six extensive tables showing the interrelationship of wrought and cast titanium alloys with the various Soviet technical standards. This information has been utilized in preparing Table 1, Table 1D, Table 1F.4, Table 1R, and Appendixes 6, 7, and 8.

TABLE 1. TITANIUM AND TITANIUM ALLOYS

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS											INTERSTITIAL ELEMENTS					
		Al	V	Mo	Sa	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen WT.% (ppm)	Nitrogen WT.% (ppm)	Carbon
Ti-Unalloyed High Purity																		
1	Sandvik Titanium 20	—	—	—	—	—	—	—	—	—	—	—	—	0.30 max	0.20 max	0.015 (150)	0.03 (300)	0.05
Ti-Unalloyed																		
2	AMS 4951C	—	—	—	—	—	—	—	—	—	—	Total 0.60	—	0.20	0.18	0.005 (50)	0.05 (500)	0.08
3	ASTM B381, Grade F-1	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.20	0.18	0.0150 (150)	0.03 (300)	0.10
4	ASTM B381, Grade F-2	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.30	0.25	0.0150 (150)	0.03 (300)	0.10
5	ASTM B381, Grade F-3	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.30	0.35	0.0150 (150)	0.05 (500)	0.10
6	ASTM B381, Grade F-4	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	0.0150 (150)	0.05 (500)	0.10
7	IMI-180	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Eliant A 1*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed-100.0, High Purity																		
9	Ventron Pure Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed-94.0																		
10	CC Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Z Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	CS Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Titanium Powder Grade CC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	Titanium Powder Grade Z	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed-90.4, CP, -ksi 15																		
15	M D 68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Ti-Loy 99	—	—	—	—	—	—	—	0.25	—	—	—	—	—	0.50 max	—	—	0.10 max
17	Blackwells Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	HyLite 15H*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	HyLite 15*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	HyLite 10*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	HyLite 1*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.013 (130)	—	—
Ti-Unalloyed-99.0, CP, Powder																		
22	DeGussa Ti Powder	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	Ti-100A	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.40	0.010 (100)	0.05 (500)	0.08
24	Ti-75A	—	—	—	—	—	—	—	—	—	—	—	—	0.30 max	0.40	0.015 (150)	0.05 (500)	0.08
25	L-7004, Ti-99.0	—	—	—	—	—	—	—	—	—	—	—	—	0.50 max	0.40	0.0125 (125)	0.07 (700)	0.10
26	BS CP 3003 Part 9, Grade 5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.010 (100)	0.05 (500)	0.10
27	BS CP 3003 Part 9, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.01 (100)	0.05 (500)	0.10
28	HMW 75	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.01 (100)	0.05 (500)	0.10
29	Armco Ti-70*	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.0125 (125)	—	0.10
30	BS CP 3003 Part 9, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
31	BS CP 3003 Part 9, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
32	Republic RS-70*	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
33	ASTM B348, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.015 (120)	0.05 (500)	0.10
34	OMC-105 (Cast)	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	0.125 (125)	0.05 (500)	0.10
35	RMI 70	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
36	BS 3531/Part 1/T 11T	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.20	0.50	0.010 (100)	0.05 (500)	0.10
37	OMC-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38	T-44DE2	4.0	—	4.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
39	ASTM B265, Grade 4	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	—	—	—
40	ASTM F67, Grade 3	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.30	0.30	0.0125 (125)	0.07 (700)	0.10
41	ALLVAC 70	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.07 (700)	0.10
42	MIL-T-9046H Type I Comp B	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
43	MIL-T-9046H Type I Comp B	—	—	—	—	—	—	—	—	—	—	Total 0.60	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
44	Crucible A-70	—	—	—	—	—	—	—	—	—	—	Total 0.60	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
45	BS CP 3003 Part 9, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
46	ASTM B265, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.015 (150)	0.05 (500)	0.10
47	Carlson 70	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	0.010 (100)	0.05 (500)	0.10
48	ASTM B367, Grade C-4	—	—	—	—	—	—	—	—	—	—	Total 0.40	—	0.50	0.40	0.010 (100)	0.05 (500)	0.10
49	ASTM B367, Grade C-4	—	—	—	—	—	—	—	—	—	—	Total 0.40	—	0.50	0.40	0.0100 (100)	0.05 (500)	0.10
50	AMS 4921C	—	—	—	—	—	—	—	—	—	—	Total 0.30	—	0.50	0.40	0.0125 (125)	0.05 (500)	0.08

Information on this group of alloys is continued on page below
 *Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed High Purity								
1	Sandvik Titanium 20	(CP)	C-0043	SW	—	Alpha	W, Weld W	Chemical and paper ind. plat. racks, food ind., heat exchangers.
2	AMS 4951C	(CP)	—	US	AMS 4951C	Alpha	FG	Welding wire, primarily for inert arc welding.
3	ASTM B381, Grade F-1	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
4	ASTM B381, Grade F-2	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
5	ASTM B381, Grade F-3	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
6	ASTM B381, Grade F-4	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
7	IMI-160	(CP)	—	UK	2TA7.8.9	Alpha	BA, BI, W, E	Corrosion resistant.
8	Elant A 1*	(CP)	C-0013	UK	—	Alpha	All Forms	—
9	Ventron Pure Titanium	(CP)	C-0046	GY	—	Alpha	W, R, Powder, Crystal	—
Ti-Unalloyed—99.0, High Purity								
10	CG Type	—	C-0052	US	—	Alpha	Powder	Scientific applications
11	Z Type	—	C-0059	US	—	Alpha	Powder	Scientific applications
12	CS Type	—	C-0059	US	—	Alpha	Powder	Scientific applications
13	Titanium Powder Grade CC	—	C-0052	US	MIL-T-13405B	Alpha	Powder	Proteomics, powder metallurgy alloys, and getters
14	Titanium Powder Grade Z	—	C-0052	US	MIL-T-13405B	Alpha	Powder	Scientific applications
Ti-Unalloyed—99.4, Cp. - ksi YS								
15	M.D. 68	(CP)	C-0060	US	—	Alpha	Powder	For metallurgical additions and melting stock
16	Ti-Loy 99	(CP)	C-0065	US	—	Alpha	CP Ti Chip Briquette	Scientific applications
17	Blackwells Titanium	(CP)	C-0017	UK	—	Alpha	—	Chemical industry applications
18	HyLite 15H*	(CP)	C-0016	UK	—	Alpha	—	Aircraft parts, good form and weldability
19	HyLite 15*	(CP)	C-0016	UK	—	Alpha	—	Chemical industry applications
20	HyLite 10*	(CP)	C-0016	UK	—	Alpha	—	—
21	HyLite 1*	(CP)	C-0016	UK	—	Alpha	—	—
Ti-Unalloyed—99.0, CP, Powder								
22	Degussa Ti Powder	(CP)	C-0047	GY	—	Alpha	Powder	For getter material, PM components, permanent magnets
23	Ti-100A	(CP)	C-0001	US	ASTM B348	Alpha	BA, BI, E, W	Aircraft engine parts forgings
24	Ti-75A	(CP)	C-0001	SP	ASTM B265	Alpha	SH, ST, P, BA, BI, W, E	Airframe, chemical, marine, similar applications
25	L-700A, Ti-99.0	(CP)	—	UK	—	Alpha	All Forms	Tank linings for chemical industry
26	BS CP 3003 Part 9, Grade 5	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry
27	BS CP 3003 Part 9, Grade 2	(CP)	—	UK	ASTM B-348	Alpha	All Forms	Structural shapes
28	HMH 75	(CP)	C-0056	US	ASTM 4921	Alpha	BI, BA, W, E	Formability, weldability, corr. resist. marine aircraft
29	Armco Ti-70*	(CP)	C-0005	US	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry
30	BS CP 3003 Part 9, Grade 1	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry
31	BS CP 3003 Part 9, Grade 4	(CP)	—	UK	BS CP 3003	Alpha	All Forms	For nonstructural aircraft parts, mod. to severe forming
32	Republic RS-70*	(CP)	C-0011	US	—	Alpha	All Forms	Standard for bars and billets of this composition
33	ASTM B348, Grade 4	(CP)	C-0009	US	AMS 4901E	Alpha	BA, BI	For aircraft equipment, marine equipment, brackets
34	OMC-105 (Cast)	(CP)	C-0003	US	BS 3311.5	Alpha	Cast	Aircraft and marine comp. chem. ind. corr. resistant
35	RMI 70	(CP)	—	UK	AMS 4901E	Alpha	All Forms	Implants in bone surgery
36	BS 3531, Part 1, T 115	(CP)	—	UK	AMS 4901E	Alpha	All Forms	Airframe equipment, shroud spacers, ammunition boxes
37	OMC-70	(CP)	C-0009	FR	—	Alpha + beta	FG	Standard for strip, sheet & plate of this composition
38	T-44DE2	(CP)	—	US	ASTM B265	Alpha	SH, ST, P	Standard for unalloyed Ti surgical implants
39	ASTM B265, Grade 4	(CP)	—	US	ASTM F67	Alpha	BA, BI, SH, ST	For strength and corros. resist. to 600 F (316 C)
40	ASTM F67, Grade 3	(CP)	C-0008	US	AMS 4901E	Alpha	All Forms	For strength and corros. resist. to 600 F (316 C)
41	ALLVAC 70	(CP)	—	US	MIL-T-9046H	Alpha	SH, ST, P	Moderately stressed aircraft parts corrosion resistance
42	MIL-T-9046H Type I Comp. B	(CP)	—	US	MIL-T-9046H	Alpha	SH, ST, P	Tank linings for chemical industry
43	MIL-T-9046H Type I Comp. B	(CP)	—	US	AMS 4901E	Alpha	SH, ST, P, T, BA, W	Standard for strip, sheet, & plate of this composition
44	Crucible A-70	(CP)	C-0004	UK	BS CP 3003	Alpha	All Forms	Plate product applications
45	BS CP 3003 Part 9, Grade 3	(CP)	—	US	ASTM B265	Alpha	SH, ST, P	Standard for Ti & Ti-alloy castings, of this composition
46	ASTM B265, Grade 4	(CP)	C-0053	US	ASTM B367	Alpha	C	Standard for Ti & Ti-alloy castings, of this composition
47	Carson 70	(CP)	—	US	AMS 4921C	Alpha	Castings	For high strength to 400 F (204 C) & oxid. resist. to 600 F (316 C)
48	ASTM B267, Grade C-4	(CP)	—	US	—	Alpha	BA, FG, W, BI, Rings	—
49	ASTM B367, grade C-4	(CP)	—	US	—	Alpha	—	—
50	AMS 4921C	(CP)	—	US	—	Alpha	—	—

*Noncurrent standard or alloy designation

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, S T—seamless tubing, W T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS											INTERSTITIAL ELEMENTS					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.%, (ppm)	Nitrogen Wt.%, (ppm)	Carbon
Ti-Untalloyed—99.0, CP, Powder (cont.)																		
51	AMS 4901E	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	0.08
52	BS 3531/Part 1/T 115	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
53	Titanium-A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
54	Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55	Commercial Purity	—	0.02	—	—	—	—	—	—	—	—	—	Total 0.1	0.25	0.25	—	0.15	0.20
Ti-Untalloyed—99.2, CP, 55 ksi YS																		
56	Crucible A-55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (150)	0.08 (800)	0.20
57	Type A-55	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
58	Continet 55	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
59	L-7003, Ti-99.2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.0125 (125)	0.06 (600)	0.10
60	Ugine 50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61	Airvac-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
62	ASTM F87 Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.45	0.015 (150)	0.07 (700)	0.10
63	ASTM B265, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
64	OMC-55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
65	MIL-T-9046H Type I Comp C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
66	ASTM B265, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.0125 (125)	0.05 (500)	0.10
67	ASTM B348, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
68	Carlson 55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
69	Airvac 55	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.35	0.015 (150)	0.05 (500)	0.08
70	Ti-65A	—	—	—	—	—	—	—	—	—	—	—	—	0.25	—	0.015 (150)	0.07 (700)	0.08
71	RMI 55	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
72	ASTM B338, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.012 (120)	0.10	0.10
73	Republic RS-53*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
74	MIL-T-9046H Type I Comp C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
75	ASTM B337, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
76	ASTM B338, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
77	ASTM B337, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
78	Arco Ti-55*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
79	Fuchs T 6	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
80	TUV 230-1-68 Grade IV	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
81	Continet 55	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
82	ASTM B367, Grade C-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.35	0.0100 (100)	0.05 (500)	0.10
83	AMS 4900D	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
84	ASTM B367, Grade C-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.35	0.0100 (100)	0.05 (500)	0.10
85	Continet 35D	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
86	M.D. 301	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
87	TG-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
88	Commercial Purity	—	0.02	—	—	—	—	—	—	—	—	—	W 0.25	0.25	—	—	0.10	0.20
Ti-Untalloyed—99.3, CP																		
89	Continet 35D	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
90	L-7002, Ti-99.3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.05 (500)	0.10
91	TUV 230-1-68 Grade III	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Untalloyed—99.4, CP																		
92	Continet 35	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
93	Continet 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
94	TUV 230-1-68 Grade I	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
95	Continet 35	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
96	Fuchs T 3	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
Ti-Untalloyed—99.5, CP, 40 ksi YS																		
97	Ti-50A	—	—	—	—	—	—	—	—	—	—	—	—	0.20 max	0.25	0.015 (150)	0.03 (300)	0.08
98	ASTM B348, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.0125 (125)	0.03 (300)	0.10
99	ASTM B337, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
100	ASTM B338, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10

Information on this group of alloys is continued on page below.
 *Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-4V-90.5, CP, Powder (cont.)								
51	AMS 4901E	(CP)	—	US	AMS 4901E	Alpha	SH-ST P, All Forms	For strength to 400 F (204 C) & oxid. resist. to 600 F (316 C)
52	BS 3531/Part 1/7 115	(CP)	—	UK	BS 3531/1.5	Alpha	Powder	Metal implants and surgical tools
53	Titanium-A	(CP)	C-0057	US	—	Alpha	—	Scientific applications
54	Titanium	(CP)	C-0089	US	—	Alpha	—	Scientific applications
55	Commercial Purity	(CP)	—	UR	—	Alpha	—	Stock for Ti melting
Ti-6Al-4V-90.2, CP, 50 ksi YS								
56	Crucible A-55	(CP)	C-0004	US	AMS 4900D	Alpha	SH-ST P, T, B, BA, W	Nonstructural aircraft parts, all types corr. resistance
57	Type A-55	(CP)	C-0055	US	AMS 4900	Alpha	All Forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
58	Contimet 55	(CP)	C-0046	GY	DIN 3 7065	Alpha	BA, SH, ST, P, W, FG, E, T	Hardest grade CP Ti, for pumps/fittings, aircraft industry
59	L-7003, Ti-99.2	(CP)	—	SP	—	Alpha	—	
60	Ugine 50	(CP)	C-0020	FR	—	Alpha	All Forms	
61	ALLVAC-50	(CP)	C-0008	US	—	Alpha	All Forms	
62	ASTM F67, Grade 4	(CP)	—	US	ASTM F67	Alpha	BA, B, SH, ST	
63	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH-ST P	
64	ONC-55	(CP)	C-0009	US	AMS 4900D	Alpha	All Forms	Standard for unalloyed Ti surgical implants
65	MIL-T-9046H Type I Comp C	(CP)	—	US	MIL-T-9046H	Alpha	SH-ST P	Standard for strip, sheet, & plate of this composition
66	ASTM B265, Grade 3	(CP)	—	US	ASTM B265	Alpha	SH-ST P	Chemical plant equip., anodizing racks, welding rods
67	ASTM B348, Grade 3	(CP)	—	US	ASTM B348	Alpha	SH-ST P	For strength and corros. resist. to 600 F (316 C)
68	Carison 55	(CP)	—	US	ASTM B265-3	Alpha	BA, B, I	Standard for strip, sheet, & plate of this composition
69	ALLVAC 55	(CP)	C-0053	US	AMS 4900D	Alpha	P, FG	Standard for bars and billets of this composition
70	Ti-65A	(CP)	C-0008	US	AMS 4900D	Alpha	All Forms	Plate product applications
71	RMI 55	(CP)	C-0001	US	—	Alpha	All Forms	
72	ASTM B338, Grade 3	(CP)	C-0003	US	AMS 4900D	Alpha	All Forms	Aircraft structure components corrosion resistant
73	Republic RS-55*	(CP)	—	US	ASTM B338	Alpha	ST & W T-H Exch Con	Aircraft and marine comp., chem. and corr. resistant
74	MIL-T-9046H Type I Comp C	(CP)	C-0011	US	MIL-T-9046H	Alpha	SH-ST P	Std. for ST & W T for heat exchangers & condensers
75	ASTM B337, Grade 3	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pl.	For strength and corros. resist. to 600 F (316 C)
76	ASTM B338, Grade 3	(CP)	—	US	ASTM B338	Alpha	ST & W T-H Exch Con	Standard for seamless and weld pipe of this composition
77	ASTM B337, Grade 3	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pl.	Std. for ST & W T for heat exchangers & condensers
78	Amico Ti-55*	(CP)	C-0005	US	ASTM 4900D	Alpha	BI, BA, W, E	Standard for seamless and weld pipe, this composition
79	Fuchs T 6	(CP)	C-0054	GY	LN 3 7064	Alpha	FG	Formability, weldability, corr. resist., marine, aircraft
80	TUV 230-1-68 Grade IV	(CP)	—	GY	TUV 230 IV	Alpha	SH, BA	Moderate weldability, highest unalloyed strength
81	Contimet 55	(CP)	C-0046	GY	—	Alpha	All Forms	
82	ASTM B367, Grade C-3	(CP)	—	US	ASTM B367	Alpha	C	Hardest grade of CP Ti, with reduced form. Aircraft fittings
83	AMS 4900D	(CP)	—	US	AMS 4900D	Alpha	SH-ST P	Standard for Ti & Ti-alloy castings of this composition
84	ASTM B367, Grade C-3	(CP)	—	US	ASTM B367	Alpha	Castings	For strength to 400 F (204 C) & oxid. resist. to 600 F (316 C)
85	Contimet 35D	(CP)	C-0046	GY	—	Alpha	All Forms	Standard for Ti & Ti-alloy castings, this composition
86	M.D. 301	(CP)	C-0060	US	GOST 5303	Alpha	Powder	Spec. Ti grade for press. vessels VDTUV authorized
87	FG-2	(Sponge)	—	UR	—	Alpha	Sponge	Scientific applications
88	Commercial Purity	(CP)	—	UR	—	Alpha	Iodide Ti	Stock for Ti melting
Ti-6Al-4V-90.3, CP								
89	Contimet 35D	(CP)	—	GY	DIN 3 7055	Alpha	BA, SH, ST, P, W, FG, E, T	Special grade of Ti for pressure vessels, high design
90	L-7002, Ti-99.3	(CP)	—	SP	—	Alpha	—	
91	TUV 230-1-68 Grade III	(CP)	—	GY	TUV 230 III	Alpha	SH, BA	
Ti-6Al-4V-90.4, CP								
92	Contimet 35	(CP)	C-0046	GY	DIN 3 7035	Alpha	BA, SH, ST, P, W, FG, E, T	Most widely used CP Ti. Good tensile strength & good formability
93	Contimet 30	(CP)	C-0046	GY	DIN 3 7025	Alpha	BA, SH, ST, P, W, FG, E, T	Good deep drawing prop., vessel linings ductile
94	TUV 230-1-68 Grade II	(CP)	—	GY	TUV 230 II	Alpha	SH, BA	
95	Contimet 35	(CP)	C-0046	GY	—	Alpha	All Forms	Most widely used CP Ti. Medium tensile strength. Cold formable
96	Fuchs T 3	(CP)	C-0054	GY	LN 3 7034	Alpha	FG	Intermediate strength, high corrosion resistance
Ti-6Al-4V-90.5, CP, -40 ksi YS								
97	Ti-50A	(CP)	C-0001	US	ASTM B267	Alpha	SH, ST, P, B, I, BA, W, E	Airframe, chemical, marine, similar applications
98	ASTM B348, Grade 2	(CP)	—	US	ASTM B348	Alpha	BA, B, I	Standard for bars and billets of this composition
99	ASTM B337, Grade 2	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pl.	Standard for seamless and weld pipe of this composition
100	ASTM B338, Grade 2	(CP)	—	US	ASTM B338	Alpha	ST & W T-H Exch Con	Std. for ST & W T for heat exchangers & condensers

*Noncurrent standard for alloy designation

BA—bars; B1—billet; C—casting; E—extrusion; F—foil; FG—forging; I—ingot; P—plate; RD—rod; SH—sheet; ST—strip; T—tubing; W—wire; con—condensers; Hexch—heat exchanger; ST—seamless tubing; W T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. \leq (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt. % (ppm)	Nitrogen Wt. % (ppm)	Carbon
Ti-Unalloyed—99.5 CP, -40 ksi YS																		
101	RMI 40	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.03 (300)	0.08
102	ALLVAC 40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
103	OMC Ti-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
104	AMS 4942A	—	—	—	—	—	—	—	—	—	—	—	Total 0.15	0.20	0.25	0.015 (150)	0.05 (500)	0.10
105	AMS 4941A	—	—	—	—	—	—	—	—	—	—	—	Total 0.15	0.30	0.25	0.015 (150)	0.05 (500)	0.10
106	ASTM B337, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
107	Republic RS-40*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
108	Avesta ATi 35	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.05	0.25	0.012 (120)	0.05 (500)	0.08
109	ASTM B265, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
110	ASTM B265, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
111	Ugine 40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
112	Carlson 40	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	—	0.10
113	IMI-125	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.0125 (125)	—	—
114	MIL-T-9046H Type I Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
115	MIL-T-9046H Type I Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
116	ASTM B338, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
117	Armco Ti-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
118	Crucible A-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
119	Fuchs T 2	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.10
120	L-7001, Ti-99 5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
121	MMH 55	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	—	0.10
122	ASTM B367, Grade C-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.0100 (100)	0.03 (300)	0.10
123	ASTM B367, Grade C-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.0100 (100)	0.03 (300)	0.10
124	Titanium-AA	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
125	Contimet 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
126	DIN 3 7065	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.013 (130)	0.07 (700)	0.10
127	AMS 4902B	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.015 (150)	0.05 (500)	0.08
128	Commercial Purity	—	—	—	—	—	—	—	—	—	—	—	Mg 0.01-0.05	0.05-0.20	0.06-0.10	—	0.10	0.01
Ti-Unalloyed—99.6 CP, -25 ksi YS																		
129	ASTM B381, Grade F-11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.0150 (150)	0.03 (300)	0.10
130	Ti-35A	—	—	—	—	—	—	—	—	—	—	—	—	0.12 max	0.18	0.015 (150)	0.03 (300)	0.08
131	Koch-Light H Ti 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
132	ASTM B338, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
133	ASTM B265, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
134	ASTM B337, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
135	ASTM B337, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
136	ASTM B338, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
137	Avesta ATi 30	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.05	0.20	0.012 (120)	0.03 (300)	0.08
138	ASTM B265, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
139	ASTM B348, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.0125 (125)	0.03 (300)	0.10
140	TUV 230-1-68 Grade I	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
141	EMO Ti 110	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
142	ASTM B367, Grade C-1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.0125 (125)	0.05 (500)	0.08
143	ASTM B367, Grade C-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.20	0.18	0.0100 (100)	0.03 (300)	0.10
144	DIN 3 7055	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.20	0.18	0.0100 (100)	0.03 (300)	0.10
145	Titanium Gr NDA	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.013 (130)	0.06 (600)	0.10
146	DTD 5003B*	—	—	—	—	—	—	—	—	—	—	—	—	0.30	—	—	0.20	0.15
147	Carlson 30	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	—	0.10
148	DTD 5063A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
149	DTD 5033B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
150	DTD 5023B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99.5, CP, -40 ksi YS (cont.)								
101	RMI 40	(CP)	C-0003	US	AMS 4902	Alpha	All forms	Aircraft structure components corrosion resistant.
102	ALLVAC 40	(CP)	C-0008	US	AMS 4942	Alpha	All forms	For valves, heat exchangers, aircraft ducting
103	OMC Ti-40	(CP)	C-0009	US	AMS 4902B	Alpha	All forms	For strength to 400 F (205 C) and oxidation resistance to 400 F (205 C)
104	AMS 4942	(CP)	—	US	AMS 4942	Alpha	Seamless T	For low-pressure fluid lines and oxidation resistance to 600 F (315 C)
105	AMS 4941A	(CP)	—	US	AMS 4941A	Alpha	Welded T	Standard for seamless and welded pipe, this composition.
106	ASTM B337, Grade 2	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pl.	For nonstructural aircraft parts, moderate to severe forming
107	Republic RS-40*	(CP)	C-0011	US	—	Alpha	All forms	Standard for strip, sheet, and plate of this composition.
108	Avesta ATJ 35	(CP)	C-0021	SW	DIN 3 7055	Alpha	All forms	Standard for strip, sheet, and plate of this composition.
109	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition.
110	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition.
111	Ugine 40	(CP)	—	FR	—	Alpha	All forms	Plate product applications.
112	Carlson 40	(CP)	C-0020	FR	—	Alpha	P.F.G.	Ductile, formable, corrosion resistant.
113	IMH-125	(CP)	C-0053	UK	ASTM B265	Alpha	BASH-T.Bi.P	For strength and corrosion resistance to 600 F (315 C).
114	MIL-T-9046H Type I Comp. A	(CP)	—	US	MIL-T-9046H	Alpha	SH-ST P	For strength and corrosion resistance to 600 F (315 C).
115	MIL-T-9046H Type I Comp. A	(CP)	—	US	MIL-T-9046H	Alpha	SH-ST P	Standard for seamless and welded tubing for heat exchangers and condensers.
116	ASTM B338, Grade 2	(CP)	—	US	ASTM B338	Alpha	S.T.&W.T.-H.Exch Con	For aircraft ducting, corrosion resistance parts chemical industry
117	Ameco Ti-40	(CP)	C-0005	US	AMS 4902	Alpha	All forms	Nonstructural parts, corrosion resistance applications
118	Crucible A-40	(CP)	C-0004	US	AMS 4902B	Alpha	SH-ST P, T.Bi.BA W	Good weldability, excellent formability, high corrosion resistance
119	Fuchs T 2	(CP)	—	GY	—	Alpha	FG	Fasteners
120	L-7001, Ti-98.5	(CP)	—	SP	—	Alpha	—	Standard for titanium and titanium-alloy castings, of this composition.
121	HMH 55	(CP)	C-0056	US	ASTM B-348	Alpha	All forms	Standard for titanium and titanium-alloy castings, of this composition.
122	ASTM B367, Grade C-2	(CP)	—	US	ASTM B367	Alpha	C	Scientific applications.
123	ASTM B367, Grade C-2	(CP)	—	US	ASTM B367	Alpha	Powder	Good formability and deep draw properties ductile linings
124	Titanium-AA	(CP)	C-0057	US	—	Alpha	All forms	For strength to 400 F (204 C) and oxidation resistance to 600 F (316 C)
125	Continental 30	(CP)	C-0046	GY	—	Alpha	SH-ST P	Stock for titanium melting
126	DIN 3 7065	(CP)	—	US	DIN 3 7065	Alpha	—	Standard for forgings of this composition.
127	AMS 4902B	(CP)	—	UR	AMS 4902B	Alpha	—	Airframe, chemical, marine, similar applications
128	Commercial Purity	(CP)	—	US	—	Alpha	FG	Standard for seamless and welded tubing for heat exchangers and condensers
Ti-Unalloyed—99.5, CP, -25 ksi YS								
129	ASTM B381, Grade F-11	(CP)	C-0001	US	ASTM B381	Alpha	SH-ST P, Bi.BA, W.T.E	Standard for strip, sheet, and plate of this composition.
130	Ti-35A	(CP)	C-0018	UK	ASTM B265	Alpha	All forms	Standard for seamless and welded pipe, this composition.
131	Koch-Light H Ti 24	(CP)	—	US	—	Alpha	S.T.&W.T.-H.Exch Con	Standard for seamless and welded pipe, this composition.
132	ASTM B338, Grade 1	(CP)	—	US	ASTM B338	Alpha	SH-ST P	Standard for seamless and welded pipe, this composition.
133	ASTM B265, Grade 1	(CP)	—	US	ASTM B265	Alpha	Seamless & Weld Pl.	Standard for seamless and welded pipe, this composition.
134	ASTM B337, Grade 1	(CP)	—	US	ASTM B337	Alpha	Seamless — Weld Pl.	Standard for seamless and welded pipe, this composition.
135	ASTM B337, Grade 1	(CP)	—	US	ASTM B337	Alpha	S.T.—W.T.-H.Exch Con	For lining vessels
136	ASTM B338, Grade 1	(CP)	—	US	ASTM B338	Alpha	All forms	Standard for bars and billets of this composition.
137	Avesta ATJ 30	(CP)	C-0021	SW	DIN 3 7035	Alpha	SH-ST P	Standard for titanium and titanium-alloy castings, this composition
138	ASTM B265, Grade 1	(CP)	—	US	ASTM B265	Alpha	BA Bi	Pellets for ladle additions to stainless steel
139	ASTM B348, Grade 1	(CP)	—	US	ASTM B348	Alpha	SH BA	Plate product applications
140	TUV 230-1-66 Grade 1	(CP)	—	GE	TUV 230 1	Alpha	SH BA	—
141	EMO Ti 110	(CP)	—	US	EMO Ti 110	Alpha	C	—
142	ASTM B367, Grade C-1	(CP)	—	US	ASTM B367	Alpha	—	—
143	ASTM B367, Grade C-1	(CP)	—	US	ASTM B367	Alpha	—	—
144	DIN 3 7055	(CP)	—	GY	DIN 3 7055	Alpha	All forms	—
Ti-Unalloyed—99.7, CP, -ksi YS								
145	Titanium Gr NOA	(CP)	C-0049	US	—	Alpha	Pellets, Unalloyed	—
146	DTD 5003B*	(CP)	—	UK	DTD 5003B	Alpha	BA	—
147	Carlson 30	(CP)	C-0053	US	ASTM B265-1	Alpha	P.F.G.	—
148	DTD 5003A*	(CP)	—	UK	DTD 5003A	Alpha	SH	—
149	DTD 5003B*	(CP)	—	UK	DTD 5003B	Alpha	SH	—
150	DTD 5023B*	(CP)	—	UK	DTD 5023B	Alpha	SH	—

*Noncurrent standard or alloy designation

BA—bars, Bi—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen	Nitrogen	Carbon
															WT.%	WT.% (ppm)	WT.% (ppm)	
Ti-Unalloyed—99.7, CP, - ksi YS (cont.)																		
151	Avesta ATI 24	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.10	0.012 (120)	0.03 (300)	0.05
152	DIN 3.7035	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
153	EMO Ti 140	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
Ti-Unalloyed—99.7, Sponge																		
154	TG-00	—	—	—	—	—	—	—	0.05	—	—	—	Cl ₂ 0.06	0.15	0.10	0.010 (100)	0.03 (300)	0.05
Ti-Unalloyed—99.8, CP, - ksi YS																		
155	BS 2TA.3	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
156	BS 2TA.4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.010 (100)	—	—
157	BS 2TA.2	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
158	BS 2TA.1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
159	BS 2TA.5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	—
160	BS 2TA.9	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	—
161	BS 2TA.8	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.010 (100)	—	—
162	BS 2TA.6	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
163	BS 2TA.7	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
164	DIN 3.7025	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
165	BS TA.1*	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
Ti-Unalloyed—99.999, High-Purity																		
166	Koch-Light H Ti.72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99.9, CP, - ksi YS																		
167	VTI-0	—	—	—	—	—	—	—	—	0.10	—	—	Total 0.30	0.30	0.20	0.010 (100)	0.04 (400)	0.07
168	VTI-00	—	—	—	—	—	—	—	0.08	—	—	—	Total 0.10	0.20	0.10	0.008 (80)	0.04 (400)	0.05
Ti-Unalloyed—99.9, Sponge																		
169	Koch-Light H Ti.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99.9, Iodide Ti																		
170	Commercial Purity	0.03	—	—	—	—	—	—	—	0.02	—	—	Total 0.10	0.02	0.01	0.04 (400)	0.01 (100)	0.03
Ti-Unalloyed—99.9, CP, - ksi																		
171	ASTM B381, Grade F-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
172	ASTM B381, Grade F-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
173	ASTM B381, Grade F-4	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.015 (150)	0.05 (500)	0.10
174	ASTM B381, Grade F-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
175	ATI-25V	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.008 (80)	0.04 (400)	0.10
176	ATI-15V	—	—	—	—	—	—	—	0.10	—	—	—	—	0.12	0.12	0.006 (60)	0.04 (400)	0.08
177	Type A-35	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
178	DIN 17864, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
179	DIN 17862, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	0.20-0.35	0.10-0.30	0.013 (130)	0.05-0.07	0.08-0.10
180	DIN 17863, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
181	DIN 17850, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30	0.015 (150)	0.05 (500)	0.08
182	Type A-75	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
183	W 65A	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.03 (300)	0.08
184	W 80A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
185	W 50A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
186	W 35A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
187	VTI-2	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.010 (100)	0.03 (300)	0.08
188	VTI-D-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
189	VTI-1	—	—	—	—	—	—	—	0.15	—	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
190	ATI-45	—	—	—	—	—	—	—	0.12	—	—	—	—	0.11-0.15	0.35	0.012 (120)	0.07 (700)	0.10
191	TTC 20B Casting	—	—	—	—	—	—	—	—	—	—	—	—	0.05	—	—	—	—
192	DTD 5013B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
193	Sandvik Titanium 9	—	—	—	—	—	—	—	—	—	—	—	—	0.15 max	0.09 max	0.005 (50)	0.01 (100)	0.035
194	Alivac 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
195	IMI-115	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
196	Atlas 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
197	UT35	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
198	Ugine 35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
199	UT40	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.0125 (125)	0.06 (600)	0.08
200	TiL 100 Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99.7, CP, - ksi TS (cont.)								
151	Avesta ATI 24	(CP)	C-0021	SW	DIN 3.7025	Alpha	All forms	For deep drawing operations.
152	DIN 3.7035	(CP)	—	GY	DIN 3.7035	Alpha	All forms	
153	EMO Ti 140	(CP)	—	GE	EMO Ti 140	Alpha	All forms	
Ti-Unalloyed—99.7, Sponge								
154	TG-00	(Sponge)	—	UR	GOST 5303	Alpha	Sponge	Stock for titanium melting
Ti-Unalloyed—99.8, CP, - ksi TS								
155	BS 2TA.3	(CP)	—	UK	BS 2TA.3	Alpha	BA, Sections/mach.	
156	BS 2TA.4	(CP)	—	UK	BS 2TA.4	Alpha	FG Stock	Forgings and forging stock
157	BS 2TA.2	(CP)	—	UK	BS 2TA.2	Alpha	SH ST	
158	BS 2TA.1	(CP)	—	UK	BS 2TA.1	Alpha	SH ST	
159	BS 2TA.5	(CP)	—	UK	BS 2TA.5	Alpha	FG	Forgings
160	BS 2TA.9	(CP)	—	UK	BS 2TA.9	Alpha	FG Stock	Forgings and forging stock
161	BS 2TA.8	(CP)	—	UK	BS 2TA.8	Alpha	SH ST	
162	BS 2TA.6	(CP)	—	UK	BS 2TA.6	Alpha	BA, Sections/mach.	
163	BS 2TA.7	(CP)	—	UK	BS 2TA.7	Alpha	SH ST	
164	DIN 3.7025	(CP)	—	GY	DIN 3.7025	Alpha	All forms	
165	BS TA.1*	(CP)	—	UK	BS TA.1*	Alpha	SH ST	
Ti-Unalloyed—99.999, High-Purity								
166	Koch-Light H Ti 72	(High-purity, Ti)	C-0018	UK	—	Alpha	High-purity crystal	High purity single crystals 3 x 6 centimeters
Ti-Unalloyed—99.9, CP, - ksi TS								
167	VTI-0	(CP)	—	UR	—	Alpha	All forms	
168	VTI-00	(CP)	—	UR	—	Alpha	All forms	
Ti-Unalloyed—99.9, Sponge								
169	Koch-Light H Ti 18	(CP)	C-0018	UK	—	Alpha	All forms	Stock for titanium melting
Ti-Unalloyed—99.9, Iodide Ti								
170	Commercial Purity	(Iodide, CP)	—	UR	—	Alpha	—	Stock for titanium melting
Ti-Unalloyed—99.9, CP, - ksi TS								
171	ASTM B381, Grade F-2	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
172	ASTM B381, Grade F-3	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
173	ASTM B381, Grade F-4	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
174	ASTM B381, Grade F-1	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
175	ATI-2SV	(CP)	—	UR	—	Alpha	Welding electrode	
176	ATI-1SV	(CP)	—	UR	—	Alpha	Welding Rod	
177	Type A-35	(CP)	C-0055	US	AMS 4902	Alpha	All forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
178	DIN 17864, 4 CP Grades	(CP)	—	GY	DIN 17864	Alpha	Covers 4 compositions	
179	DIN 17862, 4 CP Grades	(CP)	—	GY	DIN 17862	Alpha	Covers 4 compositions	
180	DIN 17863, 4 CP Grades	(CP)	—	GY	DIN 17863	Alpha	Covers 4 compositions	
181	DIN 17850, 4 CP Grades	(CP)	—	GY	DIN 17850	Alpha	Covers 4 compositions	
182	Type A-75	(CP)	C-0055	US	AMS 4501	Alpha	All forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
183	W 65A	(CP)	C-0066	US	—	Alpha	All forms	
184	W 80A	(CP)	C-0066	US	—	Alpha	All forms	
185	W 50A	(CP)	C-0066	US	—	Alpha	All forms	
186	W 35A	(CP)	C-0066	US	—	Alpha	All forms	
187	VTI-2	(CP)	—	UR	—	Alpha	All forms	
188	VTI-D-1	(CP)	—	UR	—	Alpha	All forms	
189	VTI-1	(CP)	—	UR	—	Alpha	All forms	
190	ATI 45	(CP)	C-0021	SW	DIN 3.7065	Alpha	—	Used where severe mechanical stresses are involved
191	TTC 20B Casting	(CP)	C-0006	US	ASTM B-367-C	Alpha	C	Commercial titanium castings
192	DTD 5013B*	(CP)	—	UK	DTD-5013B	Alpha	3A	Very-high purity titanium, sea water, nuclear reactors
193	Sandvik Titanium 9	(CP)	C-0043	SW	—	Alpha	—	
194	Alvac 30	(CP)	C-0008	UK	2TA1	Alpha	All forms	Ductile, formable, corrosion resistant
195	IMI-115	(CP)	C-0013	UK	—	Alpha	BA, SH, ST, W, E	
196	Atlas 30	(CP)	—	FR	AECMA	Alpha	All forms	Cold formable and easily weldable
197	UT35	(CP)	C-0020	FR	—	Alpha	BA, SH, P, W, FG	
198	Ugine 35	(CP)	C-0020	FR	AECMA	Alpha	BA, SH, P, W, FG	
199	UT40	(CP)	C-0020	FR	—	Alpha	BA, SH, P, W, FG	
200	TiL 100 Grade 2	(CP)	C-0025	US	ASTM B367-69	Alpha	C	Cold formable and easily weldable Graphite rammed castings

BA—bars B—billet C—casting E—extrusion F—foil FG—forging I—ingot P—plate RD—rod SH—sheet
ST—strip T—tubing W—wire con—condensers Hetch—heat exchanger, ST—seamless tubing WT—
welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt. % (ppm)	Nitrogen Wt. % (ppm)	Carbon
	Ti-Untalloyed—88, CP, -50 ksi YS	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
201	IMI-155	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.010 (100)	0.05 (300)	0.10
	Ti-Untalloyed—88, CP, -55 ksi YS	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.010 (100)	0.03 (300)	0.10
202	TiL 100 Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
203	TiL 100 Grade 2A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Untalloyed—88, CP, -65 ksi YS	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.40	0.0125 (125)	0.07 (700)	0.10
204	UT60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Untalloyed—88, CP, -60 ksi YS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
205	Crucible A-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07 (700)	0.05-0.1
	Ti-Untalloyed—88, CP, - ksi YS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
206	VT-1D	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
207	VT-1D-2	—	—	—	—	—	—	—	0.15	—	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
208	Ti-45-A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
209	Avesta ATi 45	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.25	0.012 (120)	0.05 (500)	0.10
210	Resilient Ti	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07 (700)	0.10
211	Tikulan RT 20	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.013 (130)	0.07 (700)	0.10
212	Ductile Ti	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
213	VT1L	—	—	—	—	—	—	—	0.15	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.15
214	VT1	—	—	—	—	—	—	—	0.15	—	—	—	—	0.30	0.15	0.015 (150)	0.04 (400)	0.10
215	IMI-130	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.013 (130)	0.03 (300)	0.12
216	Dynaplat 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
217	Ti-Braun 40	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	—	—	—
218	Ti-55-A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
219	Krupp 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
220	AIR 9182 (T50)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
221	AIR 9182 (T40)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
222	AIR 9182 (T35)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
223	UT40R (special rivet grade)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
224	Krupp 18S	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
225	T-35	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—
226	T-60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
227	T-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
228	T-40	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—
229	MMA-1970	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.015 (150)	0.02 (200)	0.05
230	MMA-1950	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.02 (200)	0.05
231	MMA-1940	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.02 (200)	0.05
232	UT50	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.35	0.0125 (125)	0.07 (700)	0.08
233	Ti P 02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
234	Ti P 04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
235	L.W. 37024 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
236	L.W. 37064 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
237	L.W. 37034 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
238	Ti P 01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
239	DTD 5193*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240	DTD 5183*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
241	DTD 5073*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
242	AIR 9182 (T60)	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	0.10
243	Krupp 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
244	ST-80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
245	ST-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
246	ST-60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
247	ST-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
248	ST-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
249	KS-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
250	KS-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below
 *Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
201	Ti-35Al-65Ni-35Zr, CP, -50 ksi YS	(CP)	C-0013	UK	2TA6	Alpha	SH ST	Corrosion resistant. Slight forming only
202	Ti-35Al-65Ni-35Zr, CP, -55 ksi YS	(CP)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings
203	TiL 100 Grade 3	(CP)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings
204	Ti-35Al-65Ni-35Zr, CP, -60 ksi YS	(CP)	C-0020	FR	AIR-9182	Alpha	BA SH P W FG	Cold formable and easily weldable
205	Ti-35Al-65Ni-35Zr, CP, -60 ksi YS	(CP)	C-0004	US	—	Alpha	All forms	Aircraft parts and commercial titanium applications
206	VT-1D	—	—	UR	—	Alpha	—	—
207	VT-1D-2	—	—	UR	—	Alpha	—	—
208	Ti-45-A*	(CP)	C-0001	US	—	Alpha	—	Fasteners, nonstructural members, corrosion resistant
209	Avesta AT-45	(CP)	C-0021	SW	—	Alpha	All forms	Surgical implant alloy
210	Resilient Ti	(IMI-155-160), C	—	XX	ISO Draft	Alpha	—	—
211	Titanium RT 20	(CP)	C-0019	GY	DIN 3.7065	Alpha	—	—
212	Ductile Ti	(IMI-115), (CP)	—	XX	ISO Draft	Alpha	All forms	Surgical implant alloy
213	VTIL	(CP)	—	UR	—	Alpha	—	Unalloyed titanium for castings
214	VTI	(CP)	—	UR	—	Alpha	IC	—
215	IMI-130	(CP)	C-0013	UK	—	Alpha	All forms	Ductile, formable, corrosion resistant
216	Dynalloy 30	(P)	C-0050	GY	DTD 5273.83	Alpha	BA BLW P SH T	Cladding with explosion-bonded technique
217	Ti-Bruah 40	(CP)	C-0010	US	—	Alpha	Explosion-bond clad	For aircraft and missile components. High fatigue strength
218	Ti-55-A*	(CP)	C-0001	US	—	Alpha	All forms	Fasteners, nonstructural members. Corrosion resistant
219	Krupp 12	(CP)	C-0019	GY	—	Alpha	All forms	—
220	AIR 9182 (T50)	(IMI-130), (CP)	—	FR	AIR-9182	Alpha	SH	—
221	AIR 9182 (T40)	(IMI-125), (CP)	—	FR	AIR-9182	Alpha	SH	—
222	AIR 9182 (T35)	(IMI-115), (CP)	—	FR	AIR-9182	Alpha	SH	—
223	UT40R (Special Rivet Gr I)	(CP)	C-0020	FR	—	Alpha	SH	Wire made into rivets for aeronautical industry
224	Krupp 185	(CP)	C-0019	GY	—	Alpha	W rivets	—
225	T-35	(CP)	—	FR	—	Alpha	All forms	—
226	T-60	(CP)	—	FR	AIR-9182	Alpha	—	—
227	T-50	(CP)	—	FR	AIR-9182	Alpha	—	—
228	T-40	(CP)	—	FR	AIR-9182	Alpha	—	—
229	MMA-1970	(CP)	C-0002	US	—	Alpha	—	—
230	MMA-1950	(CP)	C-0002	US	—	Alpha	—	—
231	MMA-1940	(CP)	C-0002	US	—	Alpha	—	—
232	UT50	(CP)	C-0020	FR	—	Alpha	All forms	—
233	Ti P02	(CP)	—	FR	—	Alpha	All forms	—
234	Ti P04	(CP)	—	FR	—	Alpha	BA SH P FG W	—
235	LW 3.7024 Werkstoff	(CP)	—	GY	AECMA P02	Alpha	—	—
236	LW 3.7064 Werkstoff	(CP)	—	GY	AECMA P04	Alpha	—	—
237	LW 3.7034 Werkstoff	(CP)	—	GY	LW 3.7024	Alpha	—	—
238	Ti P01	(CP)	—	FR	LW 3.7024	Alpha	—	—
239	DTD 5193*	(CP)	—	UK	AECMA P01	Alpha	—	—
240	DTD 5183*	(CP)	—	UK	DTD 5193	Alpha	SH ST	—
241	DTD 5073*	(CP)	—	UK	DTD 5183	Alpha	SH ST	—
242	AIR 9182 (T60)	(IMI-160), (CP)	—	FR	DTD 5073	Alpha	T	—
243	Krupp 15	(CP)	C-0019	GY	AIR 9182	Alpha	SH	—
244	ST-80	(CP)	C-0045	JA	—	Alpha	All forms	—
245	ST-70	(CP)	C-0045	JA	—	Alpha	All forms	—
246	ST-60	(CP)	C-0045	JA	—	Alpha	All forms	—
247	ST-50	(CP)	C-0045	JA	—	Alpha	All forms	—
248	ST-40	(CP)	C-0045	JA	—	Alpha	All forms	—
249	KS-70	(CP)	C-0044	JA	—	Alpha	All forms	—
250	KS-50	(CP)	C-0044	JA	—	Alpha	All forms	—

*Noncurrent standard or alloy designation

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hesch—heat exchanger, ST—seamless tubing, WT—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen WT.% (ppm)	Nitrogen WT.% (ppm)	Carbon
Ti-Untreated-98, CP, - ksi YS (cont.)																		
251	DIN 17862, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
252	DIN 17860, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
253	T 993	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
254	T 992	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
255	T 994	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
256	T 995	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
257	Ti P 05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Untreated-98, Sponge																		
258	TG-140	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
259	TG-155	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
260	TP99	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
261	TG-190	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
262	TG-170	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
263	Commercial Purity	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Untreated																		
264	ASTM B363, Grade WPT2	Al-8337 Gr.2	T-8338 Gr.2	P-8265 Gr.2	B-8348 Gr.2	C-8367 Gr.2	—	—	—	—	—	—	—	—	—	—	—	—
265	ASTM B363, Grade WPT1	Al-8337 Gr.1	T-8338 Gr.1	P-8265 Gr.1	B-8348 Gr.1	C-8367 Gr.1	—	—	—	—	—	—	—	—	—	—	—	—
266	ASTM B363, Grade WPT3	Al-8337 Gr.3	T-8338 Gr.3	P-8265 Gr.3	B-8348 Gr.3	C-8367 Gr.3	—	—	—	—	—	—	—	—	—	—	—	—
267	ASTM B363, Grade WPT1	Al-8337 Gr.1	T-8338 Gr.1	P-8265 Gr.1	B-8367 Gr.1	C-8367 Gr.1	—	—	—	—	—	—	—	—	—	—	—	—
268	ASTM B363, Grade WPT2	Al-8337 Gr.2	T-8338 Gr.2	P-8265 Gr.2	B-8367 Gr.2	C-8367 Gr.2	—	—	—	—	—	—	—	—	—	—	—	—
269	ASTM B363, Grade WPT3	Al-8337 Gr.3	T-8338 Gr.3	P-8265 Gr.3	B-8367 Gr.3	C-8367 Gr.3	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Untreated-CP, - ksi YS																		
270	DTD 5283	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
271	DTD 5273	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Untreated-98, Powder, Sponge																		
272	TG-1-3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
273	TG-130	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
274	PI	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
275	TG-118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
276	TG-130P	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
277	PKHM3 TG	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
278	TG-110	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
279	TG-1050P	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
280	TG-0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
281	TG-1000P	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
282	ASTM B299, Ti Sponge	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
283	ASTM B299, GP-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
284	ASTM B299, ML-120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
285	ASTM B299, MD-120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
286	ASTM B299, SL-120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti ₂ Powder																		
287	Titanium Hydride Powder	—	Na 0.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Pd 0.15-0.20																		
288	RMI 0.2 Pd	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 0-Mo 0-Sn 11-31.0																		
289	DTD M160*	Al	—	Mo	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—
290	DTD M159*	Al	—	Mo	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 0-V 0-Cr 0																		
291	V77	Al	V	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 0-Zr 0-Si 0																		
292	IMI-EX-68*	Al	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 1-Mo 1.5																		
293	OT4-0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 1-V 0-Fe 5																		
294	ALLVAC 1-8-5*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
295	RMI 1A1-8V-5Fe	—	8.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
296	OMC-Ti-1A1-8V-5Fe*	—	7.5-8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		1.0	8.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

PI = pipe

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed-99, CP - ksi (cont.)								
251	DIN 17862, 4 CP Grades	(CP)	—	GY	DIN 17862	Alpha	All forms	
252	DIN 17860, 4 CP Grades	(CP)	—	GY	DIN 17860	Alpha	All forms	
253	T 993	(CP)	C-0063	GY	—	Alpha	—	
254	T 992	(CP)	C-0063	GY	—	Alpha	—	
255	T 994	(CP)	C-0063	GY	—	Alpha	—	
256	T 995	(CP)	C-0063	GY	—	Alpha	—	
257	Ti P 05	(IMI-130)	—	FR	AECMA P 05	Alpha	Rivet wire	Corrosion resistant, formable
Ti-Unalloyed-99, Sponge								
258	TG-140	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
259	TG-155	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
260	TP99	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
261	TG-190	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
262	TG-170	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
263	Commercial Purity	(CP)	—	UR	—	Alpha	—	
Ti-Unalloyed								
264	ASTM B363, Grade WPT2	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
265	ASTM B363, Grade WPT1	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
266	ASTM B363, Grade WPT3	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
267	ASTM B363, Grade WPT1	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
268	ASTM B363, Grade WPT2	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
269	ASTM B363, Grade WPT3	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
Ti-Unalloyed-CP, - ksi YS								
270	DTD 5283	(CP), (IMI-130)	—	UK	DTD 5283	Alpha	FG stock	Forging stock
271	DTD 5273	(CP), (IMI-130)	—	UK	DTD 5273	Alpha	BA for machining	
Ti-Unalloyed-99, Powder, Sponge								
272	TG-1-3	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
273	TG-130	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
274	PI	—	—	UR	—	Alpha	Reduced Ti powder	Stock for Ti melting
275	TG-118	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
276	TG-1130P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
277	PKHM3 TG	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
278	TG-110	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
279	TG-1050P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
280	TG-0	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
281	TG-1000P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
282	ASTM B299	—	—	US	—	Alpha	Sponge	Stock for Ti melting
283	ASTM B299 GP-1	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
284	ASTM B299, ML-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
285	ASTM B299, MD-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
286	ASTM B299, SL-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
TiH₂ Powder								
287	Titanium Hydride Powder	—	C-0052	US	—	Alpha	Powder	Getters, powder metallurgy alloys, A purity hydrogen
Ti-Pd 0.14-0.20								
288	RMI 0.2 Pd	(Pd alloy)	C-0053	US	ASTM B348	Alpha	All forms	Chemical industry for oxidizing and reducing media
Ti-Al 0-Mo 0-Sn 11-Si 0								
289	DTD M160*	(IMI 680)	—	UK	DTD M160*	Alpha - beta	—	
290	DTD M159*	(IMI 680)	—	UK	DTD M159*	Alpha - beta	—	
Ti-Al 0-V 0-Cr 0								
291	VT7	—	—	UR	—	Near-alpha	—	
Ti-Al 0-Zr 0-Si 0								
292	MI-EX-68*	—	C-0013	UK	—	Beta	BA, FG	Beta stabilized
Ti-Al 1-Mo 1.5								
293	OT4-0	—	—	UR	—	Near-alpha	IMI, BA, P, SH, ST, E, T	
Ti-Al 1-V 0-Fe 5								
294	ALLVAC 1-8-5*	(185)	C-0008	US	—	Alpha - beta	IMI, BA, W	High-strength fasteners
295	RMI 1A1-8V-5Fe	(185)	C-0003	US	—	Near-beta	IMI, BA, P	High-strength fasteners
296	OMC-Ti-1Al-8V-5Fe*	(185)	C-0009	US	—	Near-beta	IMI, BA, W	

*Noncurrent standard or alloy designation

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, S T—seamless tubing, W T—welded tubing, PI—pipe

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
	Ti-Al 1.2-Mo 0.8-Cr 7.7-Fe 3	1.20	—	0.70	—	—	—	7.7	0.08	—	—	—	Cl ₂ 0.005	—	—	—	—	—
	Ti-Al 1.5-Cr 2.5-Fe 0.5	10-2.0	—	—	—	—	—	20-3.0	—	—	—	—	—	0.50	—	—	—	—
	Ti-Al 1.5-Mo 3	1.5	—	—	—	—	3.0	—	—	—	—	—	—	—	—	—	—	0.20
	299 Republic RS-100*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 1.5-Mo 0.5-Cr 3	1.33	—	0.50	—	—	—	3.14	—	—	—	—	—	—	—	—	—	—
	Ti-Al 1.7-Mn 1.5	10-2.5	—	—	—	0.30	0.7-2.0	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
	301 OT4-1	19	—	1.33	—	—	—	4.57	—	—	—	—	—	—	—	—	—	—
	Ti-Al 1.5-Mo 1.3-Cr 4.5-Fe 3.5	19-2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2	150-2.50	—	—	—	—	—	0.20-0.50	—	0.20-0.40	—	—	B 0.001	0.20-0.40	0.15	0.055	0.02 (200)	0.10
	304 ATN	2.0	—	—	—	—	—	1.5	—	1.5	—	—	—	1.5	—	—	—	0.10
	Ti-Al 2-Cr 1.5-Fe 1.5-Si 1.5	10-2.5	—	—	—	0.30	0.8-2.0	—	—	0.15	—	—	Total 0.30	0.40	0.15	0.015 (150)	0.05 (500)	0.10
	305 AT2	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-Mn 1.5	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	306 OT4-1	2.0	—	—	—	—	1.5	—	—	—	0.20	—	—	—	—	—	—	—
	Ti-Al 2-Mn 1.5-Pd 0.2	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	307 OT4-K	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-Mn 2	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
	308 IMI-315	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
	309 Hyline 30*	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	0.013	—	—	—
	310 DTD 5043B*	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
	311 T-A2M	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-Mo 4-Sn 11-Si 0.3	2.2	—	4.0	11.0	—	—	—	—	0.3	—	—	—	—	—	—	—	—
	312 T713*	1.90	—	6.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-Mo 7	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	313 VT14-1	2.0	11.0	—	2.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-V 11-Sn 2-Zr 11	2.0	11.0	—	2.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—
	314 Transage 129 (Experiment)	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	315 OMC-Ti-2Al-11V-2Sn-11Zr	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	TiAl 2-Zr 2.5	2.0	—	—	—	20-3.0	—	—	—	—	—	—	—	—	0.30-0.45	—	—	—
	316 AK-3	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2-Zr 3.5	2.0	—	—	—	3.5	—	—	—	—	—	—	—	—	—	—	—	—
	317 4877*	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.15-0.27	—	—	—	0.12 max	0.17	0.008 (80)	0.04 (400)	0.04
	Ti-Al 2.25-Mo 1-Sn 1-Zr 5-Si 0.20	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.1-0.5	—	—	—	0.20	—	0.0125 (125)	—	—
	318 Ti-679	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	319 IMI-679	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	320 BS TA 26**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	321 BS TA 25**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.015 (150)	—	—
	322 BS TA 27**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.015 (150)	—	—
	323 BS TA 20**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	324 BS TA 19**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	325 BS TA 18**	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
	Ti-Al 2.25-Mo 4-Sn 11-Si 0.2	2.25	—	4.0	11.0	—	—	—	—	0.2	—	—	—	—	—	—	—	—
	326 Hyline 48*	20-2.5	—	0.8-1.2	10.5-11.5	40-6.0	—	—	—	0.15-0.27	—	—	Total 0.40	0.12	0.15	0.0125 (125)	0.04 (400)	0.04
	Ti-Al 2.2-Mo 1-Sn 11-Zr 5-Si 0.20	2.2	—	1.0	11.0	5.0	—	—	—	0.4	—	—	—	—	—	—	—	—
	327 AMS 4974	20-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	328 DTD 5113	2.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2.5	2.68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	329 46-T2*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	330 OT5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Ti-Al 2.5-Cr 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	331 AT3N	—	—	—	—	—	—	0.87	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ [BALANCE TITANIUM]																		
Index No.	Alloy Designation	ALLOYING ELEMENTS											INTERSTITIAL ELEMENTS					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-6Al-2.5-Cr-5.5-Fe-2.8		2.53	—	—	—	—	—	5.35	—	—	—	—	—	2.9	—	—	0.25	0.20
332 1T																		
Ti-6Al-2.5-Mn-3		2.5	—	—	—	—	3.0	—	—	—	—	—	—	—	—	—	—	0.10
333 Republic RS-110B*																		
Ti-6Al-2.5-Mo-1.5-Sn-11-Zr-5-Si-0.2		2.5	—	1.0	11.0	5.0	—	—	0.25	—	—	—	—	—	—	—	—	—
334 OMC-Ti-609																		
Ti-6Al-2.5-Mo-1.4-Cr-3.5		2.6	—	1.39	—	—	—	3.5	—	—	—	—	—	—	—	—	—	—
335 3T																		
Ti-6Al-2.5-Mo-4-Sn-11-Si-0.25		2.25	—	4.0	11.0	—	—	—	0.25	—	—	—	—	—	—	—	—	—
336 DTD 3213*		2.5	—	4.0	11.0	—	—	—	0.2	—	—	—	—	—	—	—	—	—
337 T-E11DA		2.25	—	4.0	11.0	—	—	—	0.2	—	—	—	—	—	—	—	—	—
338 IMI-680																		
Ti-6Al-2.5-Mo-7.5-Cr-10		2.6	—	7.5	—	—	—	9.8	—	—	—	—	—	—	—	—	—	—
339 VT15M																		
Ti-6Al-2.5-V-4.5-Mo-4		16-30	4.0-5.0	4.5-5.5	—	0.30	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.10
340 VT16																		
Ti-6Al-2.75-Mn-1.5		3.5-5.0	—	—	—	0.30	0.8-2.0	—	0.15	—	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
341 OT4																		
Ti-6Al-3.5		35.0-40.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25
342 Ti-6Al																		
Ti-6Al-3-5Fe-1		2.80	—	—	—	—	—	0.79	0.30	—	—	—	B 0.01	0.44	—	—	—	—
343 AT-3-2		2.70	—	—	—	—	—	0.60	0.36	—	—	—	B 0.01	0.30	—	—	—	—
344 AT-3-1																		
Ti-6Al-3-5Fe-5		2.5-3.5	—	—	—	—	—	4.5-5.5	—	—	—	—	Total 0.40	—	0.20	0.0125 (125)	0.05 (500)	0.10
345 AMS 4927*																		
Ti-6Al-3-5Fe-3		3.0	—	—	—	—	—	5.0	—	—	—	—	—	3.0	—	—	—	—
346 IMP-6-2																		
Ti-6Al-3-Mn-1.5		3.5-5.0	—	—	—	0.30	0.8-2.0	—	0.15	—	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
347 OT4																		
Ti-6Al-3-Mo-0.5-Sn-6-Zr-5-Si-0.5		3.0	—	0.5	6.0	5.0	—	—	0.5	—	—	—	—	—	—	—	—	—
348 Hyline 65*																		
Ti-6Al-3-Mo-0.5-Sn-6-Zr-5-Si-0.5		3.0	—	2.0	6.0	5.0	—	—	0.5	—	—	—	—	—	—	—	—	—
349 Hyline 60*																		
Ti-6Al-3-Mo-7-Cr-5.5-Fe-3		3.0	—	7.0	—	—	—	5.5	—	—	—	—	—	3.0	—	—	—	—
350 IVT-1																		
Ti-6Al-3-Mo-7.5-Cr-11		2.3-3.6	—	6.8-8.0	—	—	—	9.5-11.0	0.15	—	—	—	Total 0.30	0.30	0.12	0.012 (120)	0.05 (500)	0.10
351 VT15																		
Ti-6Al-3-Sn-6-Zr-5-Si-0.5		3.0	—	—	6.0	5.0	—	—	0.5	—	—	—	—	—	—	—	—	—
352 Hyline 55*																		
Ti-6Al-3-Sn-11		3.0	—	—	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—
353 TS1																		
Ti-6Al-3-V-13-Cr-11		2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	(250)	0.08	0.05
354 Ti-13V-11Cr-3Al																		
Ti-6Al-3-V-1-Mo-1.5-Zr-1		3.0	1.1	1.5	—	1.0	—	—	—	—	—	—	—	—	—	—	—	—
355 AT3-SV																		
Ti-6Al-3-V-2.5		3.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
356 IMP-7		2.5-3.5	2.0-3.0	—	—	—	—	—	0.60	—	—	—	—	0.30	0.16	0.01 (100)	0.03 (300)	—
Ti-6Al-3-V-2.5V		3.0	2.5	—	—	—	—	—	—	—	—	—	—	0.30	0.12	0.0125 (125)	0.02 (200)	0.05
357 RM 3Al-2.5V																		
Ti-6Al-3-V-2.5		3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
358 T-A3V2.5																		
359 OMC Ti-3Al-2.5V		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.05
360 ASTM B337, Grade 9		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.0125 (125)	0.02 (200)	0.05
361 UTA3V		3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
362 Crucible 3Al-2.5V		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.013 (130)	0.02 (200)	0.10
363 ASTM B338, Grade 9		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.10
364 ASTM B338, Grade 9		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.10
365 ASTM B337, Grade 9		2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.05

Information on this group of alloys is continued on page below.

*Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
332 1T	Ti-Al 2.5-Cr 5.3-Fe 2.9	—	—	UR	—	—	—	—
333	Ti-Al 2.5-Mn 3	—	—	US	—	—	—	Low density for aircraft and jet engine components
334	Ti-Al 2.5-Mo 1.5-Al 11-Zr 5-Si 0.2	—	C-0011	US	—	—	—	—
335	Ti-Al 2.5-Mo 1.4-Cr 3.5	(679)	C-0009	US	AMS 4974	Near-alpha	I.B.I.B.A.P.S.H	—
336	Ti-Al 2.5-Mo 4-Sn 11-Si 0.25	—	—	UR	—	Alpha	—	—
337	DTO 5213*	(IMI-680)	—	UK	DTD 5213*	Alpha + beta	Bl.B	—
338	IMI-680	—	—	FR	AIR	Alpha + beta	—	—
339	VT15M	—	C-0013	UK	DTD 5213	Alpha + beta	Bl.BA	High strength alloy
340	VT 16	—	—	UR	—	—	—	—
341	Ti-Al 2.75-Mn 1.5	—	—	UR	—	Alpha + beta	—	—
342	OT4	—	—	UR	—	Alpha + beta	—	—
343	Ti-Al 37.5	—	C-0058	US	—	Powder	—	Welding applications
344	Ti-Al 3-Cr 1	—	—	UR	—	—	—	—
345	AT-3-2	—	—	UR	—	Alpha + beta	—	—
346	AT-3-1	—	—	US	AMS 4927*	—	BA.BI.FG	For strength to 700 F (371 C) and oxidation resistance to 800 F (427 C)
347	Ti-Al 3-Cr 5	—	—	UR	—	Alpha + beta	—	—
348	AMS 4927*	—	—	UR	—	Alpha + beta	Powder metal alloy	Powder metallurgy alloy
349	Ti-Al 3-Cr 5-Fe 3	—	—	UR	—	Alpha + beta	—	—
350	IMP-6-2	—	—	UR	—	Alpha + beta	—	—
351	Ti-Al 3-Mn 1.5	—	—	UR	—	Alpha + beta	I.B.I.B.A.W.P.S.H.E.T	—
352	OT4	—	—	UR	—	—	—	—
353	Ti-Al 3-Mo 0.5-Sn 6-Zr 5-Si 0.5	—	—	UK	Development	—	—	Jet engine compressor blades, spacers, and discs
354	Hylite 65*	—	C-0016	UK	Development	—	—	Turbine compressor blades and discs to 932 F (500 C)
355	Ti-Al 3-Mo 2-Sn 6-Zr 5-Si 0.5	—	—	UR	—	Alpha + beta	—	—
356	Hylite 60*	—	—	UR	—	Beta	—	—
357	Ti-Al 3-Mo 7-Cr 5.5-Fe 3	—	—	UF	—	Beta	I.B.A	—
358	IVT-1	—	—	UK	Development	Alpha	—	Turbine compressor blades and discs to 932 F (500 C)
359	Ti-Al 3-Mo 7.5-Cr 1	—	—	UR	—	Alpha	—	—
360	Ti-Al 3-Sn 6-Zr 5-Si 0.5	—	C-0016	UR	—	Beta	Bl.S.H.S.T.P	Rocket motor cases, W pressure ves, fasteners honeycomb sheet
361	Hylite 55*	—	—	UR	—	Alpha + beta	—	—
362	Ti-Al 3-Sn 11	—	—	UR	—	Alpha + beta	—	—
363	Ti-Al 3-V 13-Cr 11	—	—	UR	—	Alpha + beta	—	—
364	Ti-13V-11Cr-3Al	(13-11-3)	C-0001	—	AMS 4917B	Beta	—	—
365	Ti-Al 3-V 1-Mo 1.5-Zr 1	—	—	UR	—	Alpha + beta	—	—
366	AT3-SV	—	—	UR	—	Alpha + beta	—	—
367	IMP-7	—	—	UR	—	Alpha + beta	—	—
368	RM 3Al-2.5V	(3-2.5)	C-0003	US	AMS 4943	Alpha + beta	—	—
369	T-A3V2.5	(3-2.5)	—	FR	AIR	Alpha + beta	—	—
370	OMC Ti-3Al-2.5V	(3-2.5)	C-0009	US	AMS 4943	Alpha + beta	—	—
371	ASTM B337 Grade 9	(3-2.5)	—	FR	ASTM B337	Alpha + beta	—	—
372	UT3V	(3-2.5)	C-0020	FR	—	Alpha + beta	—	—
373	Crucible 3Al-2.5V	(3-2.5)	C-0004	US	—	Alpha + beta	—	—
374	ASTM B338 Grade 9	(3-2.5)	—	US	ASTM B338	Alpha + beta	—	—
375	ASTM B339 Grade 9	(3-2.5)	—	US	ASTM B339	Alpha + beta	—	—
376	ASTM B337 Grade 9	(3-2.5)	—	US	ASTM B337	Alpha + beta	—	—

BA—bars, Bl—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, WT—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-3.5-V-2.5 (cont.)																		
366	ALLVAC 3-2.5	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-35	20-30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
367	MMA-3138	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-35	20-30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
368	AMS 4944	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
369	Ti-3Al-2.5V	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
370	AMS 4943	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
371	Ti-3V-2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-V-3.5-Mo-3.5-Cr-1.0																		
372	TS6	3.2	6.2	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-V-3.5-Mo-4-Zr-4-Cr-6																		
373	ALLVAC Ti-3.5-6-4-4	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
374	RMI 39-6-4-4	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	—	—	—	—	—	—
375	Ti-0.05-0.2Zr	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
376	MIL-T-9046H Type IV Comp C	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	—	—	—	—	—	—
377	MIL-T-9046H Type IV Comp C	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	—	—	—	—	—	—
378	Ti-3Al-8V-6Cr-4Mo-4Zr	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
Ti-3.5-V-3.5-Mo-8-Fe-2																		
379	OMC-Ti-8Mo-8V-2Fe-3Al*	3.0	8.0	8.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26-3.4	7.5-8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
380	MIL-T-9046H Type IV Comp D	26-3.4	7.5-8.5	7.5-8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26-3.4	7.5-8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-V-13-Cr-11																		
25-4.0	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
385	Ti-13Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
386	OMC-VCA	2.0-4.0	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
387	Crucible B-120VCA	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
388	ALLVAC 13-11-3	2.5-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
389	Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
390	OMC-Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
391	MIL-T-9046H Type IV Comp A	25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
392	MIL-R-81588 Type IV Comp A	25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
393	Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
394	Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
395	Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
396	Contimet VCrAl 13-11-3	25-3.5	12.5-14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
397	L-7701 Ti-3Al-13V-11Cr	3.0	13.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-V-13-Mo-11																		
398	IMP-10	3.0	13.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-Fe-Cr-Si-B-1.5																		
399	AT3	2.0-3.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5																		
400	48-13	3.0-4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
401	AT3V	3.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-Cr-1.8																		
402	AT3-V	3.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-Fe-0.1-Si-0.1																		
403	48-OT3	3.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-3.5-Mo-3																		
404	IRM4	3.0-4.0	—	3.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-4.0-Cb/Nb-4																		
405	IRM1	3.0-5.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below.

*Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-3-V-2.5								
366	ALLVAC 3-2.5	(3-2.5)	C-0008	US	—	Alpha • beta	SH ST F T	Strong seamless tubing for hydraulic lines.
367	NMA-3138	(3-2.5)	C-0002	US	—	Alpha • beta	ISH ST	Seamless tubing
368	AMS 4944	(3-2.5)	—	US	AMS 4944	Alpha • beta	Seamless hydraulic tubing	High strength, ductility, fabricability Aerospace components
369	Ti-3Al-2.5V	(3-2.5)	C-0001	US	AMS 4943	Alpha • beta	ISH ST	Strong hydraulic lines and oxidation resistant to 600 F (316 C)
370	AMS 4943	(3-2.5)	—	FR	AIR	—	Seamless tubing	
371	T-A3V2.5	—	—	—	—	—	—	
Ti-3-V-7-Mo 3.5-Cr 10								
372	TS6	—	—	UR	—	Beta	—	
Ti-3-V-8-Mo 4-Zr 4-Cr 6								
373	ALLVAC Ti-3-8-6-4-4	(Beta C)	C-0008	US	—	Beta	BI BA W P SH ST F T	High strength tr. fasteners, heavy-section parts
374	RMI 38-6-4-4	(Beta C)	C-0003	US	—	Beta	BA BI W P SH ST F T	
375	T-08C6DZRA	(Beta C)	—	FR	—	Beta	—	
376	MIL-T-9046H Type IV Comp C	(Beta C)	—	US	MIL-T-9046H	Beta	BI BA W P SH ST F T	
377	MIL-T-9046H Type IV Comp C	(Beta C)	—	US	MIL-T-9046H	Beta	BI BA W P SH ST F T	
378	Ti-3Al-8V-6Cr-4Mo-4Zr	(Beta C)	C-0009	US	—	Beta	BI BA W P SH ST F T	
Ti-3-V-8-Mo 8-Fe 2								
379	OMC-Ti-8Mo-8V-2Fe-3Al	(8-8-2-3)	C-0009	US	—	Beta	BI BA W P SH ST F	
380	MIL-T-9046H Type IV Comp D	(8-8-2-3)	—	US	MIL-T-81556	Beta	BI BA W P SH ST T	
381	MIL-T-9046H Type IV Comp D	(8-8-2-3)	—	US	MIL-T-9046H	Beta	BI BA W P SH ST T	
382	Ti-8Mo-8V-2Fe-3Al	(8-8-2-3)	C-0001	US	—	Beta	BI BA SH ST P W	Aircraft fasteners springs structural components chemical processing
Ti-3-V-13-Cr 11								
383	RMI 13V-11Cr-3Al	(13-11-3)	C-0003	US	AMS 4917B	Beta	BI BA W P SH ST T	For high strength aircraft structures
384	AMS 4917B	(13-11-3)	—	FR	AIR	Beta	SH ST P	For forming in ST cond and then precip hard vessels
385	T-V13CA	(13-11-3)	—	FR	—	Beta	—	
386	OMC-VCA	(13-11-3)	C-0009	US	AMS 4917B	Beta	BI BA P SH S	For missile cases fasteners, weld press vessels—65 F to 600 F
387	Crucible B-120VCA	(B-120)(13-11-3)	C-0004	US	AMS 4917B	Beta	BI BA SH ST P W	Missile and supersonic aircraft components, fasteners, press
388	ALLVAC 13-11-3	(13-11-3)	C-0008	US	—	Beta	BI BA W P SH ST T	
389	Ti-13V-11Cr-3Al	(13-11-3)	C-0001	US	—	Beta	BI BA SH ST P W	
390	OMC-Ti-13V-11Cr-3Al	(13-11-3)	C-0009	US	AMS 4917B	Beta	BI BA W P SH ST T	Weld pressure vessels, honeycomb airframe skins, airframe components
391	MIL-T-9046H Type IV Comp A	(B-120)	—	US	MIL-T-9046H	Beta	BI BA W P SH ST T	For high strength aircraft structures
392	MIL-R-81588 Type IV Comp A	(13-11-3)	—	US	MIL-T-81588	Beta	BI BA W P SH ST T	
393	Tikutan LT 41	(Beta)	C-0019	GY	—	Beta	—	
394	T-V13-C11A	(13-11-3)	—	FR	AIR	Beta	—	
395	T443	—	C-0016	UK	AMS 4917	Beta	BA SH ST P W F G E T	Missiles can be cold formed in aged condition
396	Contimet VCrAl 13-11-3	(13-11-3)	C-0046	GY	—	Beta	—	
397	L-7701, Ti-3Al-13V-11Cr	(13-11-3)	—	SP	—	Beta	—	
Ti-3-V-13-Mo 11								
398	IMP-10	—	—	UR	—	Beta	Powder metal alloy	Powder metallurgy alloy
Ti-3-(Fe-Cr-Si) 1.5								
399	AT3	—	—	UR	—	Alpha • beta	SH	Fasteners aircraft structures
Ti-3.5								
400	48-T3	—	—	UR	—	Alpha • beta	—	Early Ti alloy
401	AT3V	—	—	UR	—	Alpha • beta	—	
Ti-3.5-Cr 1-8								
402	AT3-V	—	—	UR	—	Alpha	SH P BA	
Ti-3.5-Fe 0.1-Si 0.1								
403	48-OT3	—	—	UR	—	Alpha • beta	SH W W	Early niu alloy
Ti-3.5-Mo 3								
404	IM4	—	—	UR	—	Alpha • beta	SH W W	Early titanium alloy
Ti-4-Cr/HR 4								
405	IRM1	—	—	UR	—	Alpha • beta	SH W W	

*Noncurrent standard or alloy designation

BA—bars BI—billet C—casting E—extrusion F—foil FG—forging I—ingot P—plate RD—rod SH—sheet
ST—strip T—tubing W—wire con—condensers Hexch—heat exchanger ST—seamless tubing, WT—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. % (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Al 4-Cb/18 4-Fe 0.1																		
406 IRM2		30-50																
Ti-Al 4-Cr 0.25-Fe 0.25																		
407 AT-4-N		40						0.21		0.20			B 0.01	0.22	0.14	0.007 (70)	0.03 (300)	
Ti-Al 4-Cr 0.5																		
408 AT-4-S		432						0.55		0.28			B 0.01		0.14	0.007 (70)	0.03 (300)	
Ti-Al 4-Mn 1.5																		
409 VT4		40-52					10-20			0.15				0.30	0.15	0.015 (150)	0.05 (500)	0.05
410 IRM5*		30-50					15-20											
Ti-Al 4-Mn 4																		
411 AIR-9184 (TA4M)		40					40											
412 AIR-9183 (TA4M)		40					40											
413 Ti-Brush 120-AM		35-45					35-45											
414 T-A4M		40					40											
415 Crucible C-130AM		30-50					30-50											0.20
416 IMH-314A*		30-50					30-50											
417 HyLite 40*		30-50					40							0.30		0.013 (130)	0.018 (180)	0.10
418 Republic RS-130*		40					40											
419 DTD 5143*		40					40											
420 DTD 5053*		40					40											
421 Ti P 62		40					40											
422 AMS 4925B*		30-50					30-50						Total 0.40	0.50	0.20	0.0125 (125)	0.07 (700)	0.15
423 Eliant AB 207*		40					40								0.50	0.015 (150)	0.10	0.10
Ti-Al 4-Fe 4.5																		
424 IRM6*		30-50																
Ti-Al 4-Mo 0.8-Sn 1.5-Zr 2.5																		
425 VT13		45			15			10		0.15				0.30	0.15	0.015 (150)	0.05 (500)	0.05
Ti-Al 4-Mo 0.5-Sn 3-Zr 2.5																		
426 VT12		40		0.8	30	25												
Ti-Al 4-Mo 3.5																		
427 IRM3		30-40		34														
Ti-Al 4-Mo 4-Sn 2																		
428 Fuchs TA 44		30-50		30-50	15-25					0.3-0.7				0.20		0.015 (150)		
429 LW 37184		30-50		30-50	15-25					0.3-0.7				0.20		0.015 (150)		0.08
430 Continet AlMoSn 4-4-2		40		40	20													
Ti-Al 4-Mo 4-Sn 2-Si 0.5																		
431 BS TA 30*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
432 BS TA 31*		30-50		30-50	15-25					0.3-0.7				0.20		0.015 (150)		
433 DTD 5153*		40		40	20					0.50								
434 BS TA 49		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.0125 (125)	0.05 (500)	
435 BS TA 32*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
436 BS TA 51		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.015 (150)	0.05 (500)	
437 Ti P 62		40		40	20					0.5								
438 BS TA 48		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.015 (150)	0.05 (500)	
439 BS TA 47		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.010 (100)	0.05 (500)	
440 BS TA 33*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
441 BS TA 46		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.0125 (125)	0.05 (500)	
442 BS TA 37*		30-50		30-50	15-25					0.3-0.7				0.20		0.015 (150)		
443 BS TA 34*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
444 BS TA 35*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
445 BS TA 36*		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)		
446 BS TA 50		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.010 (100)	0.05 (500)	
447 DTD 5353		40		40	20					0.5								
448 BS TA 57		30-50		30-50	15-25					0.3-0.7				0.20		0.0125 (125)	0.05 (500)	
449 BS TA 45		30-50		30-50	15-25					0.3-0.7				0.20	0.25	0.0125 (125)	0.05 (500)	
450 DTD 5333		40		40	20					0.5								

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
406	IRMS	—	—	UR	—	Alpha + beta	SH W W	Early titanium alloy
407	AT-4-N	—	—	UR	—	—	—	—
408	AT-4-S	—	—	UR	—	—	—	—
409	VT4	—	—	UR	—	—	—	—
410	IRMS*	—	—	US	—	Alpha + beta	I, B, BA, SH, T	Early titanium alloy
411	AIR-9184 (TA4M)	(IMI-314)	—	FR	AIR-9184	Alpha + beta	Bolts	Bolts
412	AIR-9183 (TA4M)	(IMI-314)	—	FR	AIR-9184	Alpha + beta	BA, FG, Rod	Low density, heat resistant, jet engine components, fasteners.
413	Ti-Bush 120-AM	—	—	US	—	Alpha + beta	—	Jet engine components, airframe forging fasteners
414	T-AM	—	—	FR	AIR-9184	Alpha + beta	BA, FG, FGBI	Jet engine and missile components, compressor discs, blades
415	Crucible C-130AM	—	—	US	—	Alpha + beta	—	Jet engine components, airframe forging fasteners
416	IMI-314A*	—	—	UK	DTD 5053, 514	Alpha + beta	BA, FG	Jet engine components, airframe forging fasteners
417	Hyrite 40*	—	—	UK	DTD 5053	Alpha + beta	BL, BA, FG, D, W	Jet engine components, airframe forging fasteners
418	Republic RS-130*	—	—	US	—	Alpha + beta	BA	—
419	DTD 5143*	(IMI-314)	—	UK	DTD 5143*	Alpha + beta	—	—
420	DTD 5053*	(IMI-314)	—	UK	DTD 5053*	Alpha + beta	—	—
421	Ti P 62	—	—	FR	AECMA P 62	Alpha + beta	BA, BI, FG	For high strength to 750 F (399 C)
422	AMS 4925B*	(IMI-314)	—	US	AMS 4925B*	Alpha + beta	—	—
423	Eliant AB 207*	—	—	GY	—	Alpha + beta	—	—
424	IRMS*	(IMI-314)	—	UR	—	Alpha + beta	—	Early titanium alloy
425	VT13	—	—	UR	—	Near-alpha	—	—
426	VT12	—	—	UR	—	Near-alpha	—	—
427	IRMS	—	—	UR	—	Alpha + beta	SH W W	Early titanium alloy
428	Fuchs TA 44	(IMI-550)	C-0054	GY	BS TA 34	Alpha-beta...	FG	Mainly used for British aircraft projects
429	LW 3 7184	(4-4-2)	C-0046	GY	LW 3 7184	Alpha + beta	—	—
430	Contimet AlMoSn 4-4-2	—	—	—	—	Alpha + beta	—	—
431	BS TA 30*	—	—	UK	BS TA 30*	Alpha-beta...	FG stock	Forgings, forging stock
432	DTD 5153*	—	—	UK	BS TA 31*	Alpha-beta...	BA	Forgings
433	BS TA 49	(IMI-550)	—	UK	DTD 5153*	Alpha + beta	BA sections mach	Forgings, forging stock
434	BS TA 32*	—	—	UK	BS TA 49	Alpha-beta...	BA for machining	Forgings
435	BS TA 51	—	—	UK	BS TA 32*	Alpha-beta...	FG	High-strength alloy, creep resistant to 400 C
436	BS TA 51	(IMI-550)	—	FR	BS TA 51	Alpha + beta	BA, FG	Forgings
437	Ti P 68	(IMI-550)	—	UK	AICMA	Alpha-beta...	FG	Forgings
438	BS TA 48	(IMI-550)	—	UK	BS TA 48	Alpha-beta...	FG stock	Forgings, forging stock
439	BS TA 47	(IMI-550)	—	UK	BS TA 47	Alpha-beta...	FG stock	Forgings, forging stock
440	BS TA 33*	—	—	UK	BS TA 33*	Alpha-beta...	BA sections mach	Forgings
441	BS TA 46	(IMI-550)	—	UK	BS TA 46	Alpha-beta...	FG	Forgings
442	BS TA 37*	—	—	UK	BS TA 37*	Alpha-beta...	BA for machining	Forgings, forging stock
443	BS TA 34*	—	—	UK	BS TA 34*	Alpha-beta...	FG stock	Forgings
444	BS TA 35*	—	—	UK	BS TA 35*	Alpha-beta...	FG stock	Forgings, forging stock
445	BS TA 36*	(IMI-550)	—	UK	BS TA 36*	Alpha-beta...	FG stock	Forgings, forging stock
446	BS TA 50	(IMI-550)	—	UK	BS TA 50	Alpha-beta...	FG to 100 mm	Forgings
447	DTD 5353	(IMI-550)	—	UK	DTD 5353	Alpha-beta...	p	Plate
448	BS TA 57	(IMI-550)	—	UK	BS TA 57	Alpha-beta...	BA sections mach	Forgings
449	BS TA 45	(IMI-550)	—	UK	BS TA 45	Alpha-beta...	BA match to 100 mm	Forgings
450	DTD 5333	(IMI-550)	—	UK	DTD 5333	Alpha-beta...	—	—

BA—bars BI—billet C—casting E—extrusion F—foil FG—forging I—ingot P—plate RD—rod SH—sheet
ST—strip T—tubing W—wire con—condensers Hex—hex—heat exchanger, ST—seamless tubing NT—
welded tubing

*Noncurrent standard or alloy designation

...These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. \leq (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Al-Mo 4-Sn 2-Si 0.5 (cont.)																		
451	Tikulan LT 34	30-50	—	30-50	15-25	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	0.06
452	BS TA 29*	30-50	—	30-50	15-25	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
453	DTD 5343	40	—	40	20	—	—	—	—	0.5	—	—	—	—	—	—	—	—
454	IMI-550	30-50	—	30-50	15-25	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05 (500)	—
455	HyLite 50*	40	—	40	20	—	—	—	—	0.5	—	—	—	—	—	—	—	—
456	DTD 5103	40	—	40	20	—	—	—	—	0.5	—	—	—	—	—	—	—	—
457	T-A4DE	40	—	40	20	—	—	—	—	0.5	—	—	—	—	—	—	—	—
458	DTD 5203*	40	—	40	20	—	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti-Al-Mo 4-Sn 4-Si 0.5																		
459	DTD 5223*	40	—	40	40	—	—	—	—	0.5	—	—	—	—	—	—	—	—
460	HyLite 51*	40	—	40	40	—	—	—	—	0.5	—	—	—	—	—	—	—	—
461	IMI-551	40	—	40	40	—	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti-Al 4-Sn 6-Cu 2																		
462	TS2	40	—	—	60	—	—	—	20	—	—	—	—	—	—	—	—	—
Ti-Al 4-V 1-Mo 3																		
463	Republic RS-115*	40	1.0	3.0	—	—	—	—	—	—	—	—	—	—	0.12	Low hydrogen 0.009 (90)	Low nitrogen 0.03 (300)	0.10
464	VT14(A)	40	1.16	3.23	—	—	—	—	—	0.11	—	—	—	—	—	—	—	—
465	OMC-Ti-4Al-2Mo-1V*	40	1.0	3.0	—	—	—	—	—	0.12	—	—	—	0.14	0.11	0.006 (60)	0.03 (300)	—
466	VT14(B)	4.05	0.88	2.8	—	—	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
467	VT14	35-63	0.9-1.9	2.5-3.8	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
468	VT14	35-63	0.9-1.9	2.5-3.8	—	0.3	—	—	—	—	—	—	Total 0.40	0.35	0.20	0.015 (150)	0.05 (500)	0.08
469	T-A4D3V	40	1.0	3.0	—	—	—	—	—	—	—	—	Total 0.40	0.35	0.20	0.015 (150)	0.05 (500)	0.08
470	AMS 4913A	37.5-47.5	0.75-1.25	2.5-3.5	—	—	—	—	—	—	—	—	Total 0.40	0.35	0.20	0.015 (150)	0.05 (500)	0.08
471	AMS 4912A	37.5-47.5	0.75-1.25	2.5-3.5	—	—	—	—	—	—	—	—	—	0.35	0.15	0.015 (150)	0.05 (500)	0.08
472	RMI 4Al-3Mo-1V	37.5-47.5	0.75-1.25	3.75-4.75	—	—	—	—	—	—	—	—	—	0.60	0.15	0.015 (150)	0.05 (500)	0.12
473	VT14L	43-63	0.9-1.9	2.5-3.8	—	—	—	—	—	0.2	—	—	Total 0.30	0.25 max	—	0.15 (150)	0.05 (500)	0.08
474	Ti-4Al-3Mo-1V	37.5-47.5	0.5-1.5	2.5-3.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 4-V 2																		
475	IMP-9	40	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 4.5																		
476	48-T4*	40-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 4.5-Cr 1																		
477	AT	4.67	—	—	—	—	—	0.86	—	0.27	—	—	B 0.001	0.31	—	0.007 (70)	0.24	0.05
Ti-Al 4.5-Cr 2.5																		
478	48-15*	40-50	—	—	—	—	—	20-30	—	—	—	—	—	—	—	—	—	—
Ti-Al 4.5-Sn 2.5																		
479	Republic RS-110C*	4.25-5.25	—	—	20-30	—	—	—	—	—	—	—	—	0.20	0.20	0.015-0.017	0.05 (500)	0.05
Ti-Al 4.5-V 3.5																		
480	VT14M	4.5	3.5	—	—	—	—	—	—	0.1	—	—	—	0.08	0.14	0.011 (110)	0.045 (450)	—
Ti-Al 4.5-(Fe,Cr,Si) 1.5																		
481	AT4	3.5-5.0	—	—	—	—	—	0.4-0.9	—	0.25-0.60	—	—	—	0.25-0.60	—	0.01 (100)	0.30	—
Ti-Al 4.6-Cr 2.5-Fe 0.3																		
482	VT3	4.0-5.2	—	—	—	—	—	20-30	—	0.20	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.10
Ti-Al 5																		
483	VT5	4.3-6.2	—	—	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.30	0.30	0.015 (150)	0.05 (500)	0.10
484	VT5L	4.1-6.2	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.35	0.20	0.015 (150)	0.05 (500)	0.20
485	VT5D	5.0	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.015 (150)	0.04 (400)	0.05
486	VT1.1	5.0	—	—	—	—	—	—	—	1.0	—	—	—	—	—	—	—	—
Ti-Al 5-CrFe 4																		
487	Ti-5Al-4FeCr	4.75-5.75	—	—	—	—	—	2.25-3.25	—	—	—	—	—	0.75-1.75	—	0.015 (150)	0.05 (500)	0.10
Ti-Al 5-Cr 0.9-Fe 1																		
488	AT-4-V	5.22	—	—	—	—	0.87	—	—	0.67	—	—	B 0.01	1.20	0.14	0.007 (70)	0.03 (300)	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Al 4-Mo 4-Sn 2-Si 0.5 (cont.)								
451	Titanium LT 34	—	C-0019	GY	DIN 3 7184	Alpha + beta	—	Forging stock
452	BS TA 29*	(IMI-550)	—	UK	BS TA 29*	Alpha + beta***	BA for machining	High strength alloy creep resistant to 752 F (400 C).
453	DTD 5343	(HyLite 50)	C-0013	UK	DTD 5346	Alpha + beta	FG stock to 100 mm.	Compressor discs, blades, fasteners, fuel systems, structures.
454	IMI-550	(IMI-550)	C-0016	UK	DTD 5103	Alpha + beta	BI, BA	
455	HyLite 50*	(IMI-550)	—	UK	DTD 5103	Alpha + beta	BI, BA	
456	DTD 5103	(IMI-550)	—	FR	DTD 5103	Alpha + beta	—	
457	T-A4DE	—	—	UK	DTD 5203*	Alpha + beta	BI, B	
Ti-Al 4-Mo 4-Sn 4-Si 0.5								
458	DTD 5203*	—	—	UK	DTD 5223*	Alpha + beta	FG	Good creep resistant aircraft structure heavy duty
459	DTD 5223*	(IMI-551)	C-0016	UK	IMI-551	Alpha + beta	BI, BA, FG	Very high strength titanium alloy. Creep resistant to 400 C.
460	HyLite 51*	(HyLite 51)	C-0013	UK	TA38.39.40.41	Alpha + beta	—	
461	IMI-551	—	—	UR	—	Near-alpha	—	
Ti-Al 4-Sn 8-Cu 2								
462	TS2	—	—	US	—	Alpha + beta	—	For aircraft parts of high strength.
Ti-Al 4-V 1-Mo 3								
463	Republic RS-115*	(4-3-1)	C-0011	US	—	Alpha + beta	—	
464	VT14(A)	(4-3-1)	—	UR	AMS 4912A	Alpha + beta	P, SH, ST	
465	OMC-Ti-4Al-3Mo-1V*	(4-3-1)	C-0009	US	—	Alpha + beta	—	
466	VT14(B)	(4-3-1)	—	UR	—	Alpha + beta	—	
467	VT14	(4-3-1)	—	UR	—	Alpha + beta	—	
468	VT14	—	—	FR	AIR	Alpha + beta	—	
469	T-A4D3V	(4-3-1)	—	US	AMS 4913A	Alpha + beta	SH, ST	
470	AMS 4913A	(4-3-1)	—	US	AMS 4912A	Alpha + beta	SH, ST	For strength to 600 F (315 C). Prone to crack propagation.
471	AMS 4912A	(4-3-1)	—	US	AMS 4912A	Alpha + beta	P, SH, ST	For forming in ST cond and precipitation hard crack prone.
472	RMI 4Al-3Mo-1V	(4-3-1-S)	C-0003	US	—	Alpha + beta	I, C	For aircraft parts requiring high-strength-temperature stabilization.
473	VT14L	(4-3-1)	C-0001	US	AMS 4912A	Alpha + beta	SH, ST, P	Airframe skins, stiffeners, internal structures
Ti-Al 4-V 2								
474	Ti-4Al-3Mo-1V	—	—	UR	—	Alpha + beta	Powder metal alloy	Powder metallurgy alloy
475	IMP-9	—	—	UR	—	Alpha	—	Early titanium alloy
Ti-Al 4.5								
476	48-T4*	—	—	UR	—	Alpha + beta	—	
Ti-Al 4.5-Cr 1								
477	AT	—	—	UR	—	Alpha + beta	—	
Ti-Al 4.5-Cr 2.5								
478	48-T5*	—	—	UR	—	Alpha + beta	—	Early titanium alloy
Ti-Al 4.5-Sn 2.5								
479	Republic RS-1100C*	—	C-0011	US	AMS 4926	—	SH, ST, P	Jet engine welded rings, aircraft skins, structural parts
Ti-Al 4.5-V 3.5								
480	VT15M	—	—	UR	—	—	—	
Ti-Al 4.5-(Fe, Cr, Si) 1.5								
481	AT4	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures
Ti-Al 4.5-Cr 2.5-Fe 0.3								
482	VT3	—	—	UR	—	Alpha + beta	FG, E	
Ti-Al 5								
483	VT5	—	—	UR	—	Alpha	BI, BA, E	Ti-Al5 alloy for casting
484	VT5L	—	—	UR	—	Alpha dispersoid	I, C	
485	VT5D	—	—	UR	—	Alpha	—	
486	VT1-1	—	—	UR	—	—	—	
Ti-Al 5-Cr 4								
487	Ti-5Al-4FeCr	(5-4)	C-0001	US	—	Alpha + beta	SH, BI, BAP	Airframe components
Ti-Al 5-Cr 0.9-Fe 1								
488	AT-4V	—	—	UR	—	Alpha + beta	—	

BA—bars, BI—billets, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet.

ST—strip, T—tubing, W—wire

*Noncurrent standard or alloy designation

***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-AL 5-Cr 2.75-Fe 1.25																		
489	Republic RS-140X*	4.0-6.0	—	—	—	—	—	2.1-3.5	—	—	—	—	—	1.0-2.0	—	—	—	0.08
490	OMC Ti-5Al-2.75Cr-1.25Fe	5.0	—	—	—	—	—	2.75	—	—	—	—	—	1.25	—	—	—	—
491	Republic RS-140X*	4.0-6.0	—	—	—	—	—	2.1-3.5	—	—	—	—	—	1.0-2.0	—	—	—	0.20
Ti-AL 5-Cr 3-Fe 1																		
492	VIT3	4.0-5.2	—	—	—	—	—	2.0-3.0	—	0.20	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.10
Ti-AL 5-Mo 1-Cr 1.5-Fe 1.5																		
493	Ti-5Al-1.5Cr-1.5Fe-1Mo*	5.0	1.0	—	—	—	—	1.5	—	—	—	—	—	1.5	—	—	—	—
Ti-AL 5-Mo 1-Sn 6-Zr 2																		
494	Ti-5Al-6Sn-2Zr-1Mo	5.0	—	1.0	6.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-AL 5-Mo 1-Sn 6-Zr 2-Si 0.25																		
495	Ti-5Al-6Sn-2Zr-1Mo-Si 0.25	5.0	—	1.0	6.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-AL 5-Mo 2-Sn 5-Zr 2-Si 0.25																		
496	RMI 5Al-5Sn-2Zr-2Mo-0.25Si	4.5-5.5	—	1.75-2.25	4.5-5.5	1.75-2.25	—	—	0.2-0.3	—	—	—	—	0.15	0.13	0.0125 (125)	0.03 (300)	0.05
Ti-AL 5-Mo 4-Sn 2-Zr 2-Cr 4																		
497	OMC Ti-17	5.0	—	3.8	2.0	1.8	—	4.0	—	—	—	—	—	—	—	—	—	—
498	OMC Ti-17	5.0	—	4.0	2.0	2.0	—	4.0	—	—	—	—	—	—	—	—	—	—
Ti-AL 5-Sn 2-Zr 5																		
499	AMS 4988A*	4.5-5.5	—	—	—	4.7-5.7	—	—	—	—	—	—	Total 0.40	0.15	0.12	0.013 (130)	0.03 (300)	0.04
Ti-AL 5-Sn 2.5 ELI																		
500	MIL-T-81556 Type II Comp B	4.5-7.5	—	—	20-30	—	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
501	Ti-5Al-2.5Sn ELI	4.7-5.6	—	—	20-30	—	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.08
Ti-AL 5-Sn 2.5																		
502	L-7101, Ti-5Al-2.5Sn	5.0	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
503	Fuchs TA 52	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.25	0.25	0.020 (200)	0.07 (700)	0.08
504	Continmet AlSn 52	4.5-5.75	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.30	0.0200 (200)	0.05 (500)	0.08
505	Ti P 65	5.0	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-AL 5-Sn 2.5 ELI																		
506	DIN 17851, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.020 (200)	0.05 (500)	0.10
507	ASTM B381, Grade F-6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.30	0.020 (200)	0.05 (500)	0.10
508	OMC-166A (Cast)	5.0	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
509	Continmet AlSn 52 ELI	4.7-5.6	—	—	20-30	—	—	—	—	—	—	—	—	0.15	0.12	0.0125 (125)	0.05 (500)	0.08
510	UTASE L Grade	4.5-5.5	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.07 (700)	0.10
511	UTASE L Grade	4.5-5.75	—	—	20-30	—	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
512	Continmet AlSn 52	4.5-5.75	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.30	0.0200 (200)	0.05 (500)	0.08
513	Tikutan LT 21	4.0-6.0	—	—	15-30	—	—	—	—	—	—	—	—	0.25	0.20	0.020 (200)	0.07 (700)	0.08
Ti-LOY 92																		
514	Ti-LOY 92	5.0	2.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.30	0.0200 (200)	0.05 (500)	0.10
515	ASTM B381, Grade F-6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.10
516	OMC Ti-5Al-2.5V	5.0	2.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.020 (200)	0.05 (500)	0.10
517	ASTM B265, Grade 6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.20	0.0125 (125)	—	—
518	BS TA 15*	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	—	0.0125 (125)	—	—
519	BS TA 14*	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
Ti-AL 5-Sn 2.5																		
520	DIN 17864, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
521	Arco Ti-5Al-2.5Sn*	5.0	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
522	Elamet A 18*	5.0	—	—	25	—	—	—	—	—	—	—	—	0.50	0.50	0.015 (150)	0.10	0.10
523	BS TA 16*	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	—	0.015 (150)	—	—
524	TA 17*	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	—	0.50	0.20	0.0175 (175)	0.02 (200)	0.05
MMA-5137																		
525	MMA-5137	4.0-5.25	—	—	20-30	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.01 (100)	0.05 (500)	0.10
526	TiL 110 Grade 6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
527	DIN 17862, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
528	DIN 17860, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
529	DIN 3.7115	4.0-6.0	—	—	15-30	—	—	—	—	—	—	—	—	0.25	0.20	0.020 (200)	0.07 (700)	0.08
530	LW 3.7114	4.0-6.0	—	—	15-30	—	—	—	—	—	—	—	—	0.25	0.20	0.020 (200)	0.07 (700)	0.08
531	MIL-T-81556 Type II Comp A	4.5-5.75	—	—	20-30	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.015 (150)	0.05 (500)	0.08
532	VTS-1	4.0-6.0	—	—	20-30	0.30	—	—	0.15	—	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
533	ASTM B265, Grade 6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.020 (200)	0.05 (500)	0.10
534	ASTM B381, Grade F-6	4.0-6.0	—	—	20-30	—	—	—	—	—	—	—	Total 0.30	0.50	0.30	0.0200 (200)	0.05 (500)	0.10
535	HyLite 20*	4.5-5.5	—	—	20-30	—	—	—	—	—	—	—	—	—	—	130-150 ppm	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
480	Republic RS-140X	—	C-0011	US	—	—	BI,BA,W,P,FG	For jet engine components. Heat resistant to 1000 F (538 C).
481	Republic RS-140X	—	C-0011	US	—	—	BI,BA,W,P,FG	Jet engine and turbo-supercharger components, fasteners, landing gear
482	VT3	—	—	UR	—	Alpha + beta	—	—
483	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	—	C-0009	US	—	—	—	—
484	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	(5621S)	C-0009	US	—	Near-alpha	BI,BA,P,SH	—
485	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	(5621S)	C-0001	US	—	Near-alpha	—	Forged engine discs, high-strength, corrosion resistant
486	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	(5621S)	C-0003	US	—	Near-alpha	BI,BA,P,S	Jet engine components, high-temperature and high-creep strength
487	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	(71-17)	C-0001	US	—	Alpha + beta	BI,BA	—
488	Ti-5Al-1.5Cr-1.5Fe-1.5Mo	—	C-0009	US	—	Alpha + beta	BI,BA	—
489	AMS 4968A	—	—	US	AMS 4968A*	—	BA,FG	For strength to 900 F (482 C), bolts, compressor blades
490	MIL-T-81556 Type II Comp B	(A-110 ELI)	—	US	MIL-T-81556	Alpha	BI,BA,P,SH,E,C	Liquid hydrogen tankage high-pressure vessels to -320 F (-196 C).
491	Ti-5Al-2.5Sn ELI	(A-110)	C-0001	US	—	Alpha	BI,BA,P,SH,E,W	—
492	L-7101, Ti-5Al-2.5Sn	(A-110)	—	SP	—	Alpha	—	—
493	Fuchs TA 52	(A-110)	C-0054	GY	LN 3 7114	Alpha	FG	Weldable, moderate formability, medium strength
494	Continental A1Sn 52	(A-110)	C-0046	GY	DIN 3 7115	Alpha	BA,SH,ST,P,W,FG,E,T	For aircraft engine, frames and spacecraft to 840 F (450 C).
495	Ti P 65	(IM-317)	—	FR	AECMA P 65	Alpha	All forms	Weldable, high-strength
496	DIN 17851, TiAlSn2	(A-110)	—	GY	DIN 17851	Alpha	—	—
497	ASTM B381, Grade F-6	(A-110)	—	US	ASTM B381	Alpha	FG	Standard for forgings of this composition
498	OMC-166A (Cast)	(A-110)	C-0009	US	—	Alpha	Cast	Aircraft tailcones, cryogenic tankage, stiffeners
499	Continental A1Sn 52 ELI	(A-110)	C-0046	GY	AMS 4909	Alpha	BA,SH,ST,P,W,FG,E,T	For aircraft engines and spacecraft weldable stable
500	UTASE	(A-110)	C-0020	FR	—	Alpha	BA,SH,PFG	Has good ductility and toughness to -425 F (-253 C)
501	Ti-6Al-4V ELI	(A-110)	C-0020	FR	—	Alpha	BA,SH,PFG	This L grade is a cryogenic grade. Creep resistant to 450 F (232 C)
502	Continental A1Sn 52	(A-110)	C-0046	GY	—	Alpha	BI,BA,P,SH,E,C	Easily welded titanium alloy with medium tensile strength
503	Ti-6Al-4V ELI	(A-110)	C-0046	GY	DIN 3 7114	Alpha	—	—
504	Ti-6Al-4V ELI	(A-110)	C-0046	GY	—	Alpha	Briquette	For metallurgical additions
505	Ti-6Al-4V ELI	(A-110)	C-0046	GY	—	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
506	Ti-6Al-4V ELI	(A-110)	C-0046	GY	—	Alpha	BI,BA,P,SH,E,C	For aircraft tailcones, cryogenic tankage, compressors
507	ASTM B265, Grade 6	(A-110)	C-0009	US	—	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition
508	BS TA 15*	(A-110)	—	UK	BS TA 15*	Alpha	SH	—
509	BS TA 14*	(A-110)(IM-317)	—	UK	BS TA 14*	Alpha	—	—
510	DIN 17864, TiAlSn2	(A-110)	C-0005	GY	DIN 17864	Alpha	BI,BA,P,SH,E	Higher strength than 6-4 alloy. For airframe parts
511	Armco Ti-5Al-2.5Sn*	(A-110)	C-0046	GY	AMS 4926 BA	Alpha	—	—
512	Elitair A 18*	(A-110)	—	UK	—	Alpha	FG stock	Forgings, forging stock
513	BS TA 16*	(A-110)(IM-317)	—	UK	BS TA 16*	Alpha	FG stock	Forgings
514	TA 17*	(A-110)(IM-317)	—	UK	BS TA 17*	Alpha	All forms	Aircraft and missile compressor fasteners, discs, tank linings
515	MMA-5137	(A-110)	C-0002	US	—	Alpha	C	Graphite rammed castings
516	TiL 110, Grade 6	(A-110)	C-0025	US	ASTM B367-69	Alpha	—	—
517	DIN 17862, TiAlSn2	(A-110)	—	GY	DIN 17862	Alpha	—	—
518	DIN 17860, TiAlSn2	(A-110)	—	GY	DIN 17860	Alpha	—	—
519	DIN 3 7115	(A-110)	—	GY	DIN 3 7115	Alpha	BI,BA,P,SH,E,C	—
520	LW 3 7114	(A-110)	—	GY	LW 3 7114	Alpha	BI,BA,P,SH,E,C	—
521	MIL-T-81556 Type II Comp A	(A-110)	—	US	MIL-T-81556	Alpha	SH,ST,P	For strength and corrosion resistance to 800 F (427 C), weldable
522	VT5-1	(A-110)	—	US	—	Alpha	SH,ST,P	Compressor blades, engine cowings, rings
523	ASTM B265, Grade 6	(A-110)	—	US	—	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition
524	ASTM B381, Grade F-6	(A-110)	—	US	—	Alpha	FG	Standard for titanium and titanium alloy forging of this composition
525	Hyline 20*	(A-110)	C-0016	UK	ASTM B381	Alpha	FG	Aircraft and missile compressor fasteners, discs, tank linings

*Noncurrent standard or alloy designation

BA—bars BI—billet C—casting E—extrusion F—forging FG—forging stock IM—ingot P—plate RD—rod SH—sheet
ST—strip T—tubing W—wire con—condensers Hesch—heat exchanger S T—seamless tubing W T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.-% (ppm)	Nitrogen Wt.-% (ppm)	Carbon
Ti-5-Sn 2.5 (cont.)																		
536	IMI-317	50	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
40-60	AMS 4966E	—	—	—	20-30	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08	
40-60	Crucible A-110AT	—	—	—	15-35	—	—	—	—	—	—	—	0.5 max	—	—	0.0175 (175)	0.05 (500)	0.08
40-60	Ti-5Al-2.5Sn	—	—	—	20-30	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08	
540	MIL-T-9046H Type II Comp A	45-57.5	—	—	20-30	—	—	—	—	—	—	—	Total	0.175	0.0175 (175)	0.07 (700)	0.10	
541	AMS 4953	40-60	—	—	20-30	0.20	—	—	—	—	—	—	0.50	0.20	0.0175 (175)	0.05 (500)	0.08	
542	RMI 5Al-2.5Sn	40-60	—	—	20-30	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.0125 (125)	0.05 (500)	0.10	
543	ASTM B348, Grade 6	40-60	—	—	20-30	—	—	—	—	—	—	—	—	—	—	—	—	—
544	ALLVAC 5-2.5	50	—	—	25	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08	
45-57.5	AMS 4910F	—	20-30	—	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08	
40-60	AMS 4926E	—	—	—	20-30	—	—	—	—	—	—	—	—	—	—	—	—	—
50	T-ASE	50	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
548	DTD 5083*	50	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
549	DTD 5093*	50	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
47-56	AMS 4924C	—	—	—	20-30	—	—	—	—	—	—	Total 0.40	0.25	0.12	0.0125 (125)	0.035 (350)	0.05	
450-57.5	AMS 4909C	—	—	—	20-30	—	0.10	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05	
40-60	ASTM B367, Grade C-6	—	—	—	20-30	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.0100 (100)	0.05 (500)	0.10	
40-60	ASTM B367, Grade C-6	—	—	—	20-30	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.0100 (100)	0.05 (500)	0.10	
Ti-5-Sn 5-Zr 5																		
45-55	Titanium LT 23	—	—	—	43-53	47-57	—	—	—	—	—	—	—	0.15	0.12	0.015 (150)	0.03 (300)	0.04
50	OMC-Ti-5Al-5Sn-5Zr*	—	—	—	50	50	—	—	—	—	—	—	—	—	—	—	—	—
45-55	Ti-5Al-5Sn-5Zr	—	—	—	43-53	47-57	—	—	—	—	—	—	—	0.15 max	0.12	0.015 (150)	0.03 (300)	0.04
Ti-5-V 2.5Sn 3-Zr 2																		
557	TS5	50	2.0	—	30	20	—	—	—	—	—	—	—	—	—	—	—	—
Ti-5-V 2.5-Sn 2.5-Cb/Nb 1-Ti 1																		
558	Ti-5Al-2.5Sn-2.5V-1Cb-1Ta	50	2.5	—	25	—	—	—	—	—	1.3	Ta 1.3	—	—	—	—	—	—
Ti-5-V 3-Mo 3-Zr 1																		
559	IRM7*	50	3.0	3.0	—	1.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-5-V 5-Mo 5-Cr 1.3-Fe 1																		
44-59	VT22	40-55	40-55	—	—	0.30	—	0.5-2.0	—	0.15	—	Total 0.30	0.5-1.5	0.20	0.015 (150)	0.05 (500)	0.10	
Ti-5-Zr 5-W 1-2.0.3																		
561	T-A62W	50	—	—	—	5.0	—	—	0.30	—	—	W 1.0	—	—	—	—	—	—
Ti-5.4-Mo 1.25-Cr 1.4-Fe 1.3																		
47.5-60.0	AMS 4929*	—	0.08-1.70	—	—	—	—	0.8-2.0	—	—	—	Total 0.40	0.9-1.7	0.20	0.0125 (125)	0.07 (700)	0.10	
47.5-60.0	AMS 4969*	—	0.80-1.70	—	—	—	—	0.8-2.0	—	—	—	Total 0.40	0.9-1.7	0.20	0.0125 (125)	0.07 (700)	0.10	
Ti-5.5																		
50-60	VT-10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-5.5-Mo 1-Cr 1-Fe 1																		
50-60	Ti-155A*	—	0.9-1.5	—	—	—	—	1.1-1.7	—	—	—	—	1.1-1.7	—	0.0125 (125)	0.05 (500)	0.08	
Ti-5.5-Mo 1.5-Cr 1.5-Fe 1.5																		
55	Eliant AB 203*	—	1.5	—	—	—	—	1.5	—	—	—	—	1.5	0.50	0.015 (150)	0.10	0.10	
Ti-5.5-V 5.5-Sn 2-Cu 0.3-Fe 0.3																		
50-60	Continet AlVSn 6-6-2	50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	0.35-1.00	0.20	0.0125 (125)	0.04 (400)	0.05	
Ti-6-Mo 0.5-Zr 5-Si 0.5																		
57-63	UT685	—	—	0.25-0.75	—	40-60	—	—	—	0.1-0.4	—	—	0.20	0.20	0.008 (80)	—	0.08	
Ti-6-Mo 0.5-Zr 5-Si 0.25																		
57-63	BS TA 43	—	—	0.25-0.75	—	40-60	—	—	—	0.1-0.4	—	—	0.20	0.20	0.006 (60)	0.05 (500)	—	
57-63	BS TA 44	—	—	0.25-0.75	—	40-60	—	—	—	0.1-0.4	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—	
57-63	Continet 685	—	—	0.25-0.75	—	40-60	—	—	—	0.1-0.4	—	—	0.20	0.15	0.010 (100)	0.05 (500)	0.08	
60	Ti P 67	—	—	0.5	—	50	—	—	0.25	—	—	—	—	—	—	—	—	—
573	T-A62D	—	—	0.5	—	50	—	—	0.2	—	—	—	—	—	—	—	—	—
57-63	IMI-685	—	—	0.25-0.75	—	40-60	—	—	0.1-0.4	—	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—	
57-63	Continet 685	—	—	0.25-0.75	—	40-60	—	—	0.1-0.4	—	—	—	0.20	0.15	0.010 (100)	0.05 (500)	0.08	
60	T-A625D	—	—	0.5	—	50	—	—	0.2	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-4V	6Al-4V (cont.)	(A-110)	C-0013	UK	TA14.15.16	Alpha	BA, SH, E	High strength weldable alloy
536 IMI-317		(3-25)	—	US	AMS 4968E	Alpha	FG, BI	For strength and weldability to 800 F (427 C).
537 Crucible A-110AT		(A-110)	C-0004	US	AMS 4910F	Alpha	SH, ST, P, BA, W, FG, BI	Compressor blades, welded rings, high temperature, components.
538 Ti-5Al-2.5Sn		(A-110)	C-0001	US	—	Alpha	BI, BA, SH, ST, P, W	Compressor blades, weldable
540 MIL-T-9046H Type II Comp. A		(A-110)	—	US	MIL-T-9046H	Alpha	SH, ST, P	For strength and corrosion resistance to 800 F (427 C)
541 AMS 4953		(A-110)	—	US	AMS 4953	Alpha	W, welded W	Welding wire, primarily for inert arc welding.
542 RMI 5Al-2.5Sn		(A-110)	C-0003	US	AMS 4910F	Alpha	BI, BA, P, SH, E, C	Elevated temperature parts, parts requiring welding, oxidation resistant
543 ASTM B348 Grade 6		(A-110)	—	US	ASTM B348	Alpha	BA, BI, BA, P, SH, E, C	Standard for bars and billets of this composition
544 ALLVAC 5-2.5		(A-110)	C-0008	US	AMS 4910F	Alpha	BI, BA, P, SH, E, C	For parts needing weldability and oxidation resistance
545 AMS 4910F		(A-110)	—	US	AMS 4910F	Alpha	SH, ST, P	For strength to 800 F (427 C) plus weldability
546 AMS 4926E		(A-110)	—	US	AMS 4926D	Alpha	BA, W, F, W, rings	For strength to 800 F (427 C) and good weldability
547 T-A3E		(A-110)	—	FR	AIR	Alpha	—	—
548 DTD 5083*		(IMI-317)(A-110)	—	UK	DTD 5083*	Alpha	BA	—
549 DTD 5093*		(IMI-317)(A-110)	—	UK	DTD 5093*	Alpha	SH	—
550 AMS 4924C		(A-110) ELI	—	US	AMS 4924B	Alpha	BA, FG, W, F, W, rings	For weldability, high strength, weight ratio to -423 F (-253 C)
551 AMS 4909C		(A-110) ELI	—	US	AMS 4909B	Alpha	SH, ST, P	For good weldability and ductility, good notch toughness to -423 F (-253 C)
552 ASTM B367 Grade C-6		(A-110)	—	US	ASTM B367	Alpha	Castings	Standard for titanium and titanium-alloy castings, this composition
553 ASTM B367 Grade C-6		(A-110)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, this composition
Ti-6Al-5V-5Zr-5		(S-5-5)	C-0019	GY	—	Alpha	—	—
554 Titanium LT 23		(S-5-5)	C-0009	US	—	Alpha	BI, BA, FG, SH, P	Turbine engines, air frame components, high-creep strength
555 OMC-Ti-5Al-5Zr-5Zr*		(S-5-5)	C-0001	US	—	Alpha	—	—
556 Ti-5Al-5Sn-5Zr		(S-5-5)	—	UR	—	—	—	—
Ti-6Al-5V-2.5Sn-3Zr-2		—	—	UR	—	—	—	—
557 T56		—	—	UR	—	—	—	—
Ti-6Al-5V-2.5Sn-2.5W-1Cr-1Ta		—	C-0001	US	—	—	—	—
558 Ti-6Al-2.5Sn-2.5W-1Cr-1Ta		—	—	UR	—	—	—	—
Ti-6Al-5V-5Mo-3Zr-1		—	—	UR	—	—	—	—
559 IPN7*		—	—	UR	—	Alpha + beta	BA, E	Early titanium alloy
Ti-6Al-5V-5Mo-5Cr-1.3Fe-1		—	—	UR	—	Alpha + beta	—	—
560 VT22		—	—	UR	—	Alpha + beta	—	—
Ti-6Al-5Zr-5W-1-Si-0.3		—	—	FR	AIR	Alpha + beta	—	—
561 T-A62W		—	—	US	AMS 4929*	—	BA	For light weight and good corrosion resistance to 750 F (399 C)
Ti-6Al-5.4Mo-1.25Cr-1.4Fe-1.3		—	—	US	AMS 4969*	—	FG, BI	For moderate strength to 750 F (399 C), good corrosion resistance
562 AMS 4929*		—	—	US	—	—	—	—
563 AMS 4969*		—	—	UR	—	Alpha + beta + comp	—	—
Ti-6Al-5.5		—	—	UR	—	Alpha + beta + comp	—	—
564 VT-10		—	—	US	—	Alpha + beta	FG, BI, BA, E, W	FG for aircraft propeller blades, vanes, jet engine hubs
Ti-6Al-5.5Mo-1-Cr-1-Fe-1		—	C-0001	US	—	Alpha + beta	—	—
565 Ti-155A*		—	C-0046	GY	—	—	—	—
Ti-6Al-5.5Mo-1.5-Cr-1.5-Fe-1.5		—	C-0046	GY	—	Alpha + beta	BA, SH, P, W, FG, E, ST, T	Very high strength-density ratio, deep hardenability
566 Eitanit AB 203*		—	—	FR	LW 3 7174	Alpha + beta	BA, SH, P, W, FG, E, ST, T	For blades and discs of jet engine compressors
Ti-6Al-5.5V-5.5Sn-2.5Cu-0.3-Fe-0.3		(6-6-2)	C-0046	FR	—	Alpha + beta	BA, FG	Forgings, forging stock
567 Contimet AIVSn 6-6-2		—	—	FR	—	Alpha + beta	FG	Forgings
Ti-6Al-6Mo-0.5Zr-5-Si-0.5		—	C-0020	FR	—	Alpha + beta	BA, FG	For HP-compressor for aero-engines. High strength and creep resistance
569 UT685		(IMI-685)	—	UK	BS TA 43	Alpha + beta	—	—
Ti-6Al-6Mo-0.5Zr-5-Si-0.25		(IMI-685)	—	UK	BS TA 44	Alpha + beta	—	—
569 BS TA 43		(IMI-685)	—	UK	LW 3 7154	Alpha + beta	BA, FG	Forgings
570 BS TA 44		(IMI-685)	C-0046	FR	AECMA	Alpha + beta	—	—
571 Contimet 685		(IMI-685)	—	FR	—	Alpha + beta	—	—
572 Ti P 67		—	—	FR	—	Alpha + beta	—	—
573 T-A62D		—	C-0013	UK	TA43.44	Alpha + beta	BA	Weldable good strength alloy. Creep resistant to 932 F (500 C)
574 IMI-685		(685)	C-0046	GY	—	Alpha + beta	—	High strength and creep to 1,014 F (540 C) for H.P. compressors
575 Contimet 685		—	—	FR	—	Alpha + beta	—	—
576 T-A62F5D		—	—	FR	AIR	Alpha + beta	—	—

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

**Current standard or alloy designation, not to be used on new designs

...These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-6Al-6Mo-0.8-Cb-1Ta-1																		
55-65	RMI-6Al-2Cb-1Ta-1Mo	—	—	0.5-1.0	—	—	—	—	—	—	—	15-25	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.03 (300)	0.05
55-65	MIL-R-81558 Type II Comp. D	—	—	0.5-1.0	—	—	—	—	—	—	—	15-25	Ta 0.5-1.5	0.20	0.10	0.0125 (125)	0.03 (300)	0.05
55-65	RMI 6Al-2Cb-1Ta-0.8Mo	—	—	0.7-1.5	—	—	—	—	—	—	—	15-25	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.05 (500)	0.08
60	ALLVAC 6-2-1-8	—	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
55-65	MIL-T-9046H Type II Comp. G	—	—	0.5-1.0	—	—	—	—	—	—	—	15-25	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.03 (300)	0.05
60	OMC-Ti-6Al-2Cb-1Ta-0.8Mo	—	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
60	Ti-6Al-2Cb-1Ta-0.8Mo	—	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
Ti-6Al-6Mo-1.5Sn-2Zr 1.5-81-0.35-Si 0.1																		
60	OMC-Ti-11	—	—	1.0	2.0	1.5	—	—	0.10	—	—	—	Bi 0.35	—	—	—	—	—
60	Ti-11	—	—	1.0	2.0	1.5	—	—	0.10	—	—	—	Bi 0.35	—	—	—	—	—
Ti-6Al-6Mo-1.5Sn-2Zr 5-Si 0.25																		
60	UT651A	—	—	1.0	2.0	5.0	—	—	0.25	—	—	—	—	—	—	—	—	—
Ti-6Al-6Mo-1Zr 5-Si 0.25																		
60	T-A6Z5D	—	—	1.0	—	5.0	—	—	—	—	—	—	—	—	—	—	—	—
525-725	Ti-6Al-2Cu-1Ta-0.8Mo	—	—	0.25-1.25	—	4.0-6.0	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	0.08
525-725	LW 37154	—	—	0.25-1.25	—	4.0-6.0	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	0.08
Ti-6Al-6Mo-2Zr 2-Fe 1-Si 0.25																		
53-70	VT3-1L	—	—	2.0-3.0	—	0.5	—	0.8-2.3	0.15-0.40	—	W 0.20	Total 0.30	Total 0.30	0.2-0.7	0.18	0.015 (150)	0.05 (500)	0.15
55-91	VT3-1	—	—	2.0-3.0	—	0.5	—	0.8-2.3	0.15-0.40	—	—	Total 0.30	Total 0.30	0.2-0.7	0.18	0.015 (150)	0.05 (500)	0.10
Ti-6Al-6Mo-2.5Sn-2Zr-2Cr-0.25Si																		
60	RMI 6222S	—	—	1.75-2.25	1.75-2.25	1.75-2.25	—	2.0	0.25	—	—	—	—	0.25	0.14	0.0125 (125)	0.03 (300)	0.05
55-65	Ti-6Al-2Mo-2Sn-2Zr-2Cr-0.25Si	—	—	1.75-2.25	1.75-2.25	1.75-2.25	—	1.75-2.25	0.18-0.25	—	—	—	—	—	—	—	—	—
Ti-6Al-6Mo-2.5Sn-2Zr 4																		
55-65	RMI 6Al-2Sn-4Zr-2Mo	—	—	1.75-2.25	1.75-2.25	3.5-4.5	—	—	0.10 max	—	—	—	—	0.25	0.12	0.010 (100)	0.05 (500)	0.08
55-65	AMS 4976	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.05
60	T-A6ZDE	—	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
55-65	MIL-T-9046H Type III Comp. G	—	—	1.5-2.5	1.5-2.5	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.35	0.12	0.015 (150)	0.05 (500)	0.08
60	T-A6Z4DE	—	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
60	OMC-Ti-6Al-2Sn-4Zr-2Mo	—	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
60	ALLVAC 6-2-4-2	—	—	2.0	2.0	4.0	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.0125 (125)	0.05 (500)	0.05
55-65	AMS 4975B	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.015 (150)	0.05 (500)	0.05
55-65	LW 37144	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.015 (150)	0.05 (500)	0.05
60	Crucible 6Al-2Sn-4Zr-2Mo	—	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
55-65	UT6242	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	—	0.05
55-65	MMA-9744	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.10	0.25	0.15	0.0125 (125)	0.02 (200)	0.04
55-65	Ti-6Al-2Cu-1Ta-0.8Mo	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.015 (150)	0.05 (500)	0.05
55-65	Contimet ALSnZrMo 6-2-4-2	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.05
55-65	Contimet ALSnZrMo 6-2-4-2	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.35	0.12	0.015 (150)	0.05 (500)	0.08
Ti-6Al-6Mo-2.5Sn-2Zr 4-Si 0.25																		
60	ALLVAC 6-2-4-2-Si*	—	—	2.0	2.0	4.0	—	—	0.25	—	—	—	—	—	—	—	—	—
610	OMC-Ti-6Al-2Sn-4Zr-2Mo-0.25Si	—	—	2.0	2.0	4.0	—	—	0.20	—	—	—	—	—	—	—	—	—
Ti-6Al-6Mo-2Zr 4-Sn 2																		
55-65	Contimet ALSnZrMo 6-2-4-2	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.05
Ti-6Al-6Mo-6Zr 5-Cu 1-Si 0.5																		
60	DTD M201*	—	—	4.0	—	5.0	—	—	0.20	—	—	—	—	—	—	—	—	—
60	IMI-700*	—	—	4.0	—	5.0	—	—	0.20	—	—	—	—	—	—	—	—	—
Ti-6Al-6Mo-6Sn-2Zr 4																		
60	ALLVAC 6-2-4-6	—	—	6.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
55-65	AMS 4981	—	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
55-65	RMI 6Al-2Sn-4Zr-6Mo	—	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	—	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
55-65	MMA-6248	—	—	5.5-6.5	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.10	0.15	0.15	0.0125 (125)	0.02 (200)	0.04
60	OMC-Ti-6Al-2Sn-4Zr-6Mo	—	—	0.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
618	Armco Ti-6Al-2Sn-4Zr-6Mo	—	—	0.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
619	Armco Ti-6Al-2Sn-4Zr-6Mo	—	—	0.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
55-65	Ti-6Al-2Sn-4Zr-2Mo	—	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25 max	0.12	0.0125 (125)	0.04 (400)	0.04
620	Ti-6Al-2Sn-4Zr-6Mo	—	—	5.5-6.5	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.15 max	0.12	0.0125 (125)	0.04 (400)	0.04

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
TI-6-Al-6-Mo 0.5-Cu/0.25-Ti 1								
577 RMI-6Al-2Cu-1Ti-1Mo	(6-2-1-1)	(6-2-1-1)	C-0003	US	MIL-R-81558	Near-alpha	I.B.I.B.A.P.S.H.W.E	Marine, hydrospace, deep submergence vehicles, weldable
578 MIL-R-81558 Type II Comp D	(6-2-1-1)	(6-2-1-1)	—	US	—	Alpha	I.B.I.B.A.P.	Marine, hydrospace, deep submergence vehicles, weldable
579 RMI-6Al-2Cu-1Ti-0.8Mo	(6-2-1-1)	(6-2-1-1)	C-0003	US	—	Near-alpha	I.B.I.B.A.P.H.W.E	Marine, hydrospace, deep submergence vehicles, weldable
580 ALLVAC 6-2-1-8	(6-2-1-1)	(6-2-1-1)	C-0008	US	MIL-T-9046H	Near-alpha	I.B.I.B.A.P.	For pressure hulls, resists salt water cracking, tough
581 MIL-T-9046H Type II Comp G	(6-2-1-1)	(6-2-1-1)	—	US	—	Alpha	I.B.I.B.A.P.	Compressor components for jet engines, gas turbine parts
582 OMC-Ti-6Al-2Cu-1Ti-0.8Mo	(6-2-1-1)	(6-2-1-1)	C-0009	US	—	Near-alpha	I.B.I.B.A.P.	Patented by Ugine Aciers for high temperature applications
583 Ti-6Al-2Cu-1Ti-0.8Mo	(6-2-1-1)	(6-2-1-1)	C-0001	US	—	Near-alpha	I.B.I.B.A.P.	Compressor components for jet engines, gas turbine parts
TI-6-Al-6-Mo 1-3Sn 2-2Zr 1.5-Sn 0.35-Si 0.1								
584 OMC-Ti-11	(Ti-11)	(Ti-11)	C-0009	US	—	Near-alpha	I.B.I.B.A.	For jet engine components, good high-temperature creep strength
585 Ti-11	(Ti-11)	(Ti-11)	C-0001	US	—	Near-alpha	I.B.I.B.A.F.S.H.P	For high strength, toughness and creep resistance to 1000 F (538 C)
TI-6-Al-6-Mo 1-3Sn 2-2Zr 5-Si 0.25								
586 UT651A	—	—	C-0020	FR	—	—	—	For jet engine components, good high-temperature creep strength
TI-6-Al-6-Mo 1-2Zr 5-Si 0.25								
587 T-A625D	—	—	—	FR	DIN 3 7154	Alpha + beta	—	For high strength, toughness and creep resistance to 1000 F (538 C)
588 Titanium LT 26	—	—	C-0019	GY	LW 3 7154	Alpha + beta	—	For jet engine components, good high-temperature creep strength
589 LW 3 7154	—	—	—	GY	—	Alpha + beta	—	For high strength, toughness and creep resistance to 1000 F (538 C)
TI-6-Al-6-Mo 2-2Zr 2-Fs 1-Si 0.25								
590 VT3-1L	—	—	—	UR	—	Alpha + beta	I.C	For jet engine components, good high-temperature creep strength
591 VT3-1	—	—	—	UR	—	Alpha + beta	I.B.I.B.A.P.S.H.E.T	For high strength, toughness and creep resistance to 1000 F (538 C)
TI-6-Al-6-Mo 2-3Sn 2-2Zr 2-Gr 2-Si 0.25								
592 T-6Al-2Mo-2Sn-2Zr-2Cr-Si	(6-2-2-2-2)	(6-2-2-2-2)	C-0009	US	—	Alpha + beta	I.B.I.B.A.P.S.H.E	For jet engine components, good high-temperature creep strength
593 RMI 6222S	(6-2-2-2-2)	(6-2-2-2-2)	C-0003	US	—	Alpha + beta	FG	For high strength, toughness and creep resistance to 1000 F (538 C)
TI-6-Al-6-Mo 2-3Sn 2-2Zr 4								
594 RMI 6Al-2Sn-4Zr-2Mo	(6-2-4-2)	(6-2-4-2)	C-0003	US	AMS 4976	Alpha + beta	I.B.I.B.A.P.S.H.E	For jet engine components, good high-temperature creep strength
595 AMS 4976	(6-2-4-2)	(6-2-4-2)	—	US	AIR	Alpha + beta	FG	For high strength, toughness and creep resistance to 1000 F (538 C)
596 T-A625E	—	—	—	FR	MIL-T-9046H	Alpha + beta	I.B.I.B.A.P.S.H.E	For jet engine components, good high-temperature creep strength
597 T-A625H Type III Comp G	(6-2-4-2)	(6-2-4-2)	—	US	AIR	Alpha + beta	—	For high strength, toughness and creep resistance to 1000 F (538 C)
598 T-A625HDE	(6-2-4-2)	(6-2-4-2)	—	FR	AMS 4976	Alpha + beta	I.B.I.B.A.P.S.H.E	Compressor blades and wheels. Good strength to 900 F (482 C)
599 OMC-Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	(6-2-4-2)	C-0009	US	AMS 4976	Alpha + beta	I.B.I.B.A.P.S.H.E	For high strength, toughness and creep resistance to 1000 F (538 C)
600 ALLVAC 6-2-4-2	(6-2-4-2)	(6-2-4-2)	C-0008	US	AMS 4976	Alpha + beta	BA F W rings	For jet engine components, good high-temperature strength
601 AMS 4975B	(6-2-4-2)	(6-2-4-2)	—	US	LW 3 7144	Alpha + beta	I.B.I.B.A.P.S.H.E	Weldable alloy. For blades and discs of jet engines
602 LW 3 7144	(6-2-4-2)	(6-2-4-2)	C-0004	US	—	Alpha + beta	I.B.I.B.A.P.S.H.E	Jet engine compressor parts, blades, discs, wheels
603 Crucible 6Al-2Sn-4Zr-2Mo	(6-2-4-2)	(6-2-4-2)	C-0020	CF	—	Alpha + beta	BA FG	For aircraft engines, compressor wheels and blades
604 UT6242	(6-2-4-2)	(6-2-4-2)	C-0002	US	DIN 3 7144	Alpha + beta	I.B.I.B.A.P.S.H.E	High temperature capability. High strength density ratio
605 MNA-9144	—	—	C-0019	GY	LW 3 7144	Alpha + beta	I.B.I.B.A.P.S.H.E	Ultra-high-strength alloy. Creep resistant to 752 F (400 C)
606 Titanium LT 24	—	—	—	UK	MIL-T-9046H	Alpha + beta	—	For high strength to 1000 F (538 C)
607 Continimet AlSnZrMo 6-2-4-2	(6-2-4-2)	(6-2-4-2)	C-0046	US	—	Alpha + beta	I.B.I.B.A.P.S.H.E	For jet engine components, high strength
TI-6-Al-6-Mo 2-3Sn 2-2Zr 4-Si 0.25								
608 MIL-T-9046H Type III Comp G	(6-2-4-2-Si)	(6-2-4-2-Si)	C-0008	US	—	Alpha + beta	I.B.I.B.A.P.S.H.E	High strength to 1000 F (538 C)
609 ALLVAC 6-2-4-2-Si*	(6-2-4-2-Si)	(6-2-4-2-Si)	C-0009	US	AMS 4975B	Alpha + beta	I.B.I.B.A.P.S.H.E	High strength to 1000 F (538 C)
610 OMC-Ti-6Al-2Sn-4Zr-2Mo-0.2Si	(6-2-4-2-Si)	(6-2-4-2-Si)	—	US	—	Alpha + beta	I.B.I.B.A.P.S.H.E	Aircraft gas turbine applications. High-strength alloy
TI-6-Al-6-Mo 2-2Zr 4-Sn 2								
611 Continimet AlSnZrMo 6-2-4-2	(6-2-4-2)	(6-2-4-2)	C-0046	GY	—	Alpha + beta	I.B.I.B.A.P.S.H.E	Jet engine compressor parts, blades, discs, wheels, skin
TI-6-Al-6-Mo 4-2Zr 5-Cu 1-Si 0.5								
612 DTD M201*	(IMI-700)	(IMI-700)	—	UK	DTD M201*	Alpha + beta	—	Disc fan blade of gas turbine components. Airframe components
613 IMI-700*	—	—	C-0013	UK	DTD M201*	Alpha + beta	—	
TI-6-Al-6-Mo 6-Sn 2-Zr 4								
614 ALLVAC 6-2-4-6	(6-2-4-6)	(6-2-4-6)	C-0008	US	AMS 4981	Alpha + beta	I.B.I.B.A.P.S.H.	For high strength to 1000 F (538 C)
615 AMS 4981	(6-2-4-6)	(6-2-4-6)	—	US	AMS 4981	Alpha + beta	I.B.I.B.A.P.S.H.	For jet engine components, high strength
616 RMI 6Al-2Sn-4Zr-6Mo	(6-2-4-6)	(6-2-4-6)	C-0003	US	AMS 4981	Alpha + beta	I.B.I.B.A.P.S.H.	High strength to 1000 F (538 C)
617 MMA-6246	(6-2-4-6)	(6-2-4-6)	C-0002	US	—	Alpha + beta	I.B.I.B.A.P.S.H.	Aircraft gas turbine applications. High-strength alloy
618 OMC-Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	(6-2-4-6)	C-0009	US	AMS 4981	Alpha + beta	I.B.I.B.A.P.S.H.	Jet engine compressor parts, blades, discs, wheels, skin
619 Arcco Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	(6-2-4-6)	C-0005	US	AMS 4975B	Alpha + beta	I.B.I.B.A.P.S.H.	Disc fan blade of gas turbine components. Airframe components
620 Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	(6-2-4-2)	C-0001	US	AMS 4975B	Alpha + beta	I.B.I.B.A.P.S.H.	
621 Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	(6-2-4-6)	C-0001	US	AMS 4981	Alpha + beta	I.B.I.B.A.P.S.H.	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, PD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

**Current standard or alloy designation, not to be used on new designs

***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen WT.% (ppm)	Nitrogen WT.% (ppm)	Carbon
Ti-6-5-2-2r 6-Cu 0.5-3i 0.5																		
622	Ti-6V6E2Zr	6.0	—	—	2.0	6.0	—	—	0.5	—	—	—	—	—	—	—	—	—
Ti-6-5-2-2r 6-Fe 0.5-Cu 0.05																		
623	Ti-6V6E2Fe	6.0	—	—	2.0	6.0	—	0.5	—	—	—	—	—	0.5	—	—	—	—
Ti-6-5-2.5 ELI																		
624	MIL-T-9046H Type II Comp. B	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05	
Ti-6-5-1-Mo 0.7-2r 5-0r 0.3-4i 0.2																		
625	VT21L	58-72	0.8-1.5	—	—	4.0-6.0	—	0.2-0.5	0.20	—	—	—	0.5	0.15	0.015 (150)	0.05 (500)	0.12	
Ti-6-5-4 ELI																		
626	ASTM F136	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.13	0.015 (150)	0.05 (500)	0.06	
627	MIL-T-81556 Type III Comp. B	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08	
628	Ti-6Al-4V ELI	5.5-6.5	3.4-4.5	—	—	—	—	—	—	—	—	—	0.25 max	0.13	0.010 (100)	0.05 (500)	0.08	
629	Ti-6Al-4V ELI	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25 max	0.13	0.015 (150)	0.05 (500)	0.08	
630	MIL-T-9046H Type III Co D. ELI	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08	
631	ASTM F136	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.13	0.015 (150)	0.05 (500)	0.08	
632	MIL-T-9046H Type III Co H. SPL	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.005 (50)	0.05 (500)	0.08	
633	MIL-T-9046H Type III Co H. SPL	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.005 (50)	0.05 (500)	0.08	
634	Continental ALV 64 ELI	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.15	0.13	0.0125 (125)	0.05 (500)	0.08	
Ti-6-5-4																		
635	TTC 23 Investment Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
636	Ti-6Al-V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
637	BS TA 12*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—	—
638	BS TA 11*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—	—
639	BS TA 10*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—	—
640	BS TA 13*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	—	0.015 (150)	—	—	—
641	BS TA 28*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05	—	—
642	TTC 31B Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
643	UTA6V	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.07 (700)	0.08	—
644	TTC 30B Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
645	DTD 5173*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
646	DTD 5163*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
647	TTC 34 Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
648	TTC 33A Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
649	DTD 5303	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
650	Eliant AB 209*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
651	DIN 17864, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	—	0.10
652	Ventron 88395, 906 4	6.0	4.0	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08	—
653	Armco Ti-6Al-4V*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
654	Tikulan LT 31	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.07 (700)	0.08	—
655	DIN 17860, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08	—
656	BS 2TA 28	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05 (500)	—	—
657	TiL 110 Grade 5	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.40	—	0.010 (100)	0.05 (500)	0.10	—
658	DIN 17862, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08	—
659	DIN 37165	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.25	0.013 (130)	0.07 (700)	0.08	—
660	Carpenter Titanium 6-4*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
661	Republic RS-120A*	6.0	4.0	—	—	—	—	—	—	—	—	—	0.15	—	—	—	—	0.10
662	Ti P 63	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
663	DTD 5313	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
664	BS 2TA 13	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	—	—
665	L-7301, Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
666	BS 2TA 10	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.25 (O-N)	0.0125 (125)	0.25 (O-N)	—	—
667	BS 2TA 12	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.010 (100)	0.05 (500)	—	—
668	BS 2TA 11	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05 (500)	—	—
669	Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
670	AIR-9183 (TA6V)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below.

*Noncurrent standard or alloy designation.

ELI—extra low interstitial; SPL—special Ti-6Al-4V alloy with low hydrogen (0.005 percent, 50 ppm) and low oxygen (0.13 percent).

Index No.	Alloy Designation	Common Name/Alloy	Company Code	Qty Code	Prime Country Standard	Alloy Type	Forms Available	Applications
TI-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5								
622	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	FR	AIR	—	—	Standard for forgings of this composition
TI-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5			—	FR	AIR	—	—	
623	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	MIL-T-9046H	Alpha	LB, BA, P, SH, E, C	
TI-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5			—	UR	—	Near-alpha	—	
624	MIL-T-9046H Type II Comp. B	(A-110)	—	US	ASTM F136	Alpha + beta	BA, FG, SH, ST, P	Standard of Ti-6Al-4V ELI alloy for surgical implants
TI-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5			—	US	MIL-T-81556	Alpha + beta	All forms	Airframe forging, fasteners, jet engine components
625	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4911C	Alpha + beta	SH, ST, P, BA, BI, W, E	Airframe forging, fasteners, jet engine components
626	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4911C	Alpha + beta	SH, ST, P, BA, BI, W, E	Airframe forging, fasteners, jet engine components
627	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	MIL-T-9046H	Alpha + beta	BA, FG, SH, ST, P	Standard of Ti-6Al-4V ELI alloy for surgical implants
628	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	ASTM F136	Alpha + beta	All forms	For cryogenic applications. High strength, weldable
629	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	MIL-T-9046H	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Investment castings for commercial market
630	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	MIL-T-9046H	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Made by hydride-crush-dehydrate process
631	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings, forging stock
632	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Sheet
633	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
634	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	For fasteners, bolt studs, and screws
635	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Aircraft castings of Ti-6Al-4V
636	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	The standard of the aerospace industry
637	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Commercial Ti-6Al-4V castings
638	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Castings for naval usage (USN approved specification)
639	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Castings of Ti-6Al-4V for critical applications
640	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings, forging stock
641	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	For scientific applications
642	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Fasteners and fittings in aerospace all sizes
643	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	For high-stress machinery components
644	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Fasteners complying with the BS A series
645	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Graphite rammed castings
646	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Widely used titanium alloy. Good strength weight ratio
647	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	High-notch toughness, fasteners, jet engine components
648	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Most popular titanium alloy, weldable, machinable, corrosion resistant
649	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
650	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings and forgings stock
651	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
652	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
653	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
654	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
655	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
656	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
657	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
658	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
659	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
660	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
661	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
662	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
663	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
664	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
665	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
666	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
667	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
668	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
669	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings
670	Ti-6Al-4V-2Zr-0.5Cu-0.5Zr-0.5	(A-110)	—	US	AMS 4907	Alpha + beta	BA, SH, ST, P, W, FG, E, T	Forgings

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation
ELI—extra low interstitial, SPL—special Ti-6Al-4V alloy with low hydrogen (0.005 percent 50 ppm) and low oxygen (0.13 percent)

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt. % (ppm)	Nitrogen Wt. % (ppm)	Carbon
Ti-AL 6-V 4 (cont.)																		
671	Fuchs TA 64	5.75-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.07 (700)	0.06
672	MMA-6510	6.0-6.75	3.75-4.50	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.20	0.010 (100)	0.02 (200)	0.05	
673	MIL-T-9046H Type III Comp C	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08	
674	AIR-9184 (TA6V)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
675	Carlson C-6Al-4V	5.50-6.75	3.5-4.5	—	—	—	0.40	—	—	—	—	Total 0.40	0.40	0.20	0.015 (150)	—	0.08	
676	BS TA 56	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.30 (O ₂ -N ₂)	0.0125 (125)	0.30 (O ₂ -N ₂)	—	
677	TI-LOY 90	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
678	Alloy	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
679	Contimet ALV 64	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08	
680	Contimet ALV 64	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08	
681	Republic RS-6Al-4V*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
682	DIN 17851, TiAl6V4	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.20	0.015 (150)	0.05 (500)	0.08	
683	LW 37164	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
684	OMC Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
685	T-6V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
686	AMS 4967D	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10	
687	ASTM B265, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10	
688	RMI 6Al-4V	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	—	0.015 (150)	0.05 (500)	0.08	
689	OMC-164B (Casting)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
690	MIL-T-81556 Type III Comp A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08	
691	Ti-6Al-4V	5.75-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25 max	0.20	0.015 (150)	0.05 (500)	0.10	
692	ASTM B348, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10	
693	AMS 4928G	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10	
694	AMS 4935C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10	
695	AMS 4934	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10	
696	AMS 4906	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08	
697	AMS 4911C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08	
698	Hyllite 45*	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
699	ALLVAC 6-4	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
700	AMS 4954B	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.18	0.015 (150)	0.03 (300)	0.05	
701	TEL-Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	0.60	—	—	—	0.03 (300)	0.10	
702	Crucible C-120AV	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
703	Carpenier Titanium 6-4	6.0	4.0	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10	
704	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08	
705	AMS 4965C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.15	0.015 (150)	0.05 (500)	0.08	
706	V76S	5.0-6.5	3.5-4.5	—	—	0.3	—	—	0.15	—	—	—	—	—	—	—	—	
707	IMI-318	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	—	—	
708	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10	
709	V76	5.5-7.0	4.2-6.0	—	—	—	—	—	—	0.15	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10	
710	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10	
711	ASTM B265, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10	
712	ASTM B367, Grade C-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.40	0.25	0.010 (100)	0.05 (500)	0.10	
713	ASTM B367, Grade C-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.40	0.25	0.010 (100)	0.05 (500)	0.10	
Ti-AL 6-V 4-Co 3																		
714	ALLVAC 6-4-3*	6.0	4.0	—	—	—	—	—	—	—	—	Co 3.0	—	—	—	—	—	
715	T-6V4K3	6.0	4.0	—	—	—	—	—	—	—	—	Co 3.0	—	—	—	—	—	
716	Ti-6Al-4V-3Co	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Ti-AL 6-V 4-EU																		
717	AMS 4956	5.50-6.75	3.5-4.5	—	—	—	0.10	—	—	—	—	Total 0.10	0.15	0.08	0.005 (50)	0.012 (120)	0.03	
718	AMS 4907C	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08	
719	AMS 4930A	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.13	0.0125 (125)	0.05 (500)	0.08	

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Commo Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-4V (Cont.)								
671	Fuchs TA 64	(6-4)	C-0054	GY	LN 3 7164	Alpha • beta	FG	High strength for all applications, limited weldability
672	MMA-6510	(6-4)	C-0002	US	—	Alpha • beta	All forms	
673	MIL-T-9046H Type III Comp C	(6-4)	—	US	MIL-T-9046H	Alpha • beta	All forms	Most popular titanium alloy, weldable, machinable, bolts
674	AIR-9184 (TABV)	(IMI-318), (6-4)	—	FR	AIR-9184	Alpha • beta	Bolts	Plate product applications
675	Carlson C-6A-4V	(6-4)	C-0053	US	ASTM B265-5	Alpha • beta	PFG	Plate
676	BS TA 56	(6-4)	—	UK	BS TA 56	Alpha • beta	P	For metallurgical additions and melting stock
677	Ti-LOY 90	(6-4)	C-0065	US	—	Alpha • beta	6-4Ti chip briquette	Surgical implant alloy
678	Alloy	(IMI-318), (6-4)	—	XX	ISO Draft	Alpha • beta	All forms	The most versatile titanium alloy. For all construction applications
679	Continental ALV 64	(6-4)	C-0046	GY	DIN 3 7165	Alpha • beta	BA SH ST P W FG E T	Versatile alloy forgings, excellent toughness and ductility
680	Continental ALV 54	(6-4)	C-0046	GY	—	Alpha • beta	All forms	Low density, heat resistant, aircraft, jet engine components
681	Republic RS-6A1-4V*	(6-4)	C-0011	US	—	Alpha • beta	All forms	
682	DIN 17851, Ti-6AlV4	(6-4)	—	US	DIN 17851	Alpha • beta	All forms	
683	LW 3 7164	(6-4)	—	GY	LW 3 7164	Alpha • beta	—	
684	DMC Ti-6Al-4V	(6-4)	C-0009	US	AMS 4911B	Alpha • beta	All forms	For aircraft and engine forgings, cryogenic equipment
685	T-6A5V	(6-4)	—	FR	AMS 4911B	Alpha • beta	—	
686	AMS 4967D	(6-4)	—	US	AMS 4967D	Alpha • beta	BA FG W BI	Pressure vessels and aerospace structures for machining prior to HT
687	ASTM B265, Grade 5	(6-4)	—	US	AIR-9184	Alpha • beta	SH ST P	Standard for strip, sheet and plate of this composition
688	RMI 6A1-4V	(6-4)	C-0003	US	ASTM B265	Alpha • beta	All forms	Jet engine components, ordnance equipment, airframe forgings
689	OMC-164B (Casting)	(6-4)	C-0009	US	AMS 4911B	Alpha • beta	Cast	Compressor blades and wheels, cryogenic equipment
690	MIL-T-81556 Type III Comp A	(6-4)	—	US	—	Alpha • beta	All forms	
691	Ti-6Al-4V	(6-4)	C-0001	US	MIL-T-81556	Alpha • beta	SH ST BI, BA W E	Tanks, pressure vessels, cryogenic storage vessels
692	ASTM B348, Grade 5	(6-4)	—	US	AMS 4911C	Alpha • beta	BA BI	Standard for bars and billets of this composition
693	AMS 4928G	(6-4)	—	US	ASTM B348	Alpha • beta	BA, BL, W, F W rings	For strength to 750 F (399 C), H.T. not required
694	AMS 4653C	(6-4)	—	US	AMS 4928G	Alpha • beta	EBA, T SH, F W rings	For high mechanical properties in ann. condition. High strgh/wt ratio to 750 F.
695	AMS 4834	(6-4)	—	US	AMS 4935C	Alpha • beta	EBA, T F W rings	For high mechanical properties in ann. condition. High strgh/wt ratio to 750 F.
696	AMS 4906	(6-4)	—	US	AMS 4934	Alpha • beta	SH ST	For strength to 750 F (399 C)
697	AMS 4911C	(6-4)	—	US	AMS 4906	Alpha • beta	SH ST P	For strength to 750 F (399 C). Prone to stress corrosion cracking
698	Hyllie 45*	(6-4)	—	UK	AMS 4911C	Alpha • beta	BA FG SH	Jet engine components, fasteners, airframe structures, forgings
699	ALLVAC 6-4	(6-4)	C-0016	US	ASTM B265	Alpha • beta	All forms	Welding wire primarily for inert, arc welding, gas shield
700	AMS 4954B	(6-4)	C-0008	US	AMS 4911B	Alpha • beta	All forms	Compressor components for jet engines, pressure vessels
701	TEL-Ti-6Al-4V	(6-4)	—	US	AMS 4954B	Alpha • beta	All forms	Jet engine components, ordnance equipment, airframe forging
702	Crucible C-1204V	(6-4)	C-0007	US	AMS 4911B	Alpha • beta	BI, BA FG P W	Jet engine components, airframe forgings, fasteners
703	Carbenter Titanium 6-4	(6-4)	C-0004	US	AMS 4911C	Alpha • beta	C, BI, BA W	Standard for forgings of this composition
704	ASTM B381, Grade F-5	(6-4)	C-0042	US	AMS 4967A	Alpha • beta	FG	Pressure vessels and aerospace structures for machining after heat treatment
705	AMS 4865C	(6-4)	—	US	ASTM B381	Alpha • beta	BA FG F W rings	
706	V765	(6-4)	—	US	AMS 4965C	Alpha • beta	BI, BA P SH T C	Most popular titanium alloy, weldable, machinable, corrosion resistant
707	IMI-318	(6-4)	C-0013	UK	2TA10 1112	Alpha • beta	BA SH WE Rod	Standard for titanium and titanium-alloy forging of this composition
708	ASTM B381, Grade F-5	(6-4)	—	US	ASTM B381	Alpha • beta	FG	Jet engine components, fasteners, airframe
709	V76	(6-4)	—	US	—	Alpha • beta	BI, BA SH E T	Standard for titanium and titanium-alloy forgings of this composition
710	ASTM B381, Grade F-5	(6-4)	—	US	ASTM B381	Alpha • beta	FG	Standard for strip, sheet and plate of this composition
711	ASTM B265, Grade 5	(6-4)	—	US	ASTM B265	Alpha • beta	SH ST P	Standard for titanium and titanium-alloy castings of this composition
712	ASTM B367, Grade C-5	(6-4)	—	US	ASTM B367	Alpha • beta	C	Standard for titanium and titanium-alloy castings of this composition
713	ASTM B367, Grade C-5	(6-4)	—	US	ASTM B367	Alpha • beta	Castings	Standard for titanium and titanium-alloy castings of this composition
Ti-6Al-4V-Co 3								
714	ALLVAC 6-4-3*	(6-4-3)	C-0008	US	—	Alpha • beta	—	
715	T-6A5V-3Co	—	—	FR	AIR	Alpha • beta	BI, BA P	
716	Ti-6Al-4V-3Co	—	C-0001	US	—	Alpha • beta	W, weld W	Quality gas tungsten-arc welding wire for cryogenic applications
Ti-6Al-4V-ELI								
717	AMS 4956	(6-4) ELI	—	US	AMS 4956	Alpha • beta	SH ST P	For weldability, ductility and good notch hardness to -423 F (-253 C)
718	AMS 4907C	(6-4) ELI	—	US	AMS 4907C	Alpha • beta	BA W FG BI F W ring	For weldability, ductility and notch toughness to -320 F (-196 C)
719	AMS 4900A	(6-4) ELI	—	US	AMS 4900A	Alpha • beta	—	

*Noncurrent standard or alloy designation

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H—hex, H exch—heat exchanger, ST—seamless tubing, W T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS								INTERSTITIAL ELEMENTS								
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt. % (ppm)	Nitrogen Wt. % (ppm)	Carbon
Ti-6Al-6V 4-51 0.2		50-65	3.5-4.5	—	—	0.30	—	—	—	0.15	—	W 0.20	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
720 VTDL		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
Ti-6Al-6V 6-5n 2		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
721 AMS 4971A		55	55	—	2.0	—	—	—	0.5	—	—	—	—	0.50	—	—	—	—
722 AMS 4979		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
723 Carpenter Titanium 6-6-2		60	60	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
724 MIL-T-81556, Type III Comp. C		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
725 OMC Ti-6Al-6V-2Sn		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
726 AMS 4936		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
727 AMS 4918D		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
728 MIL-T-9046H, Type III Comp. E		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
729 Ti-6Al-6V-2Sn		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
730 RMI 6Al-6V-2Sn		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.0125 (125)	0.04 (400)	0.08
731 AMS 4978A		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
732 Carpenter Titanium 6-6-2		55	55	—	2.0	—	—	—	0.5	—	—	—	—	0.50	—	—	—	—
733 Tairan LT 33		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.08
734 Fuchs TA 66		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
735 Armco Ti-6Al-6V-2Sn*		60	60	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
736 UT862		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	Total 0.10	0.35-1.00	0.20	0.015 (150)	0.04 (400)	—
737 MMA-515H		50-60	50-60	—	15-25	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.0125 (125)	0.02 (200)	0.04
738 Ti P 64		60	60	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
739 ALLVAC 6-6-2		60	60	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
740 LW 3.7174		50-60	50-60	—	15-25	—	—	—	—	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
741 T-A6VE		60	60	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6V 6-5n 2-Zr 6		60	60	—	2.0	6.0	—	—	—	—	—	—	—	—	—	—	—	—
742 UTASVESN2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6Zr 1.5-Mn 1.5		60	—	—	—	15 (Note)	—	—	—	—	—	—	—	—	—	—	—	—
743 OT4-2 (Notes)		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6Zr 5-W 1-Si 0.2		60	—	—	—	5.0	—	—	—	0.3	—	—	W 1.0	—	—	—	—	—
744 IMI-684		60	—	—	—	5.0	—	—	—	0.2	—	—	W 1.0	—	—	—	—	—
745 T-A6Z5W		60	—	—	—	5.0	—	—	—	0.3	—	—	W 1.0	—	—	—	—	—
746 OTD M200*		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6-(Fe,Cr,Si,B) 1.5		50-65	—	—	—	—	—	0.3-0.9	—	0.2-0.4	—	—	—	0.25-0.60	—	0.010 (100)	0.30	—
747 AT6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6.5-Mo 1.2-Cb/Nb 2-Ta 1		6.5	—	1.2	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
748 Ti-6Al-2Cb-1Ta		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6.5-Mo 3.5-Zr 2 (or Sn)-Si 0.25		56-7.0	—	28-38	—	0.8-2.0	—	—	—	0.20-0.35	—	W 0.20	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.15
749 VTDL		58-7.0	—	28-38	—	0.8-2.0	—	—	—	0.20-0.35	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.10
750 VTR		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-6.5-V 1-Mo 1-Zr 2		55-7.5	0.8-1.8	0.5-2.0	—	1.5-2.5	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
751 VT20		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-7-Cb/Nb 2-Ta 1		7.0	—	—	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
752 Ti-7Al-2Cb-1Ta		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-7-Cr 0.3-0.8		7.07	—	—	—	—	—	0.28	—	0.20	—	—	B 0.01	0.25	0.12	0.005 (50)	0.03 (300)	—
753 AT-R-N		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-7-Cr 0.5-0.8		6.49	—	—	—	—	—	0.59	—	0.59	—	—	—	0.43	0.15	0.007 (70)	0.04 (400)	—
754 AT-S-V		7.18	—	—	—	—	—	0.59	—	0.28	—	—	B 0.005	0.51	0.12	0.005 (50)	0.03 (300)	—
755 AT-S-S		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-7-Mo 0.5-3n 2-Si 0.5		7.0	—	0.5	2.0	—	—	—	—	0.50	—	—	—	—	—	—	—	—
756 T-ATDE		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-6Al-7-Mo 3		7.0	—	3.0	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10	0.10
757 Elicant AB 210*		—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10	0.10

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

NOTE OT4.2 alloy is listed with and without Zr

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-6V-4Si-0.2		(6-4)-Si	—	UR	—	Alpha + beta	IC	6-4 titanium alloy for castings
720 VT6L		(6-6-2)	—	US	AMS 4971A	Alpha + beta	BA FGFW rings	For high strength weight ratio to 750 F (399 C)
Ti-6Al-6V-6Sn-2		(6-6-2)	—	US	AMS 4979	Alpha + beta	FG BIBA P SH	For high strength weight ratio to 750 F (399 C)
721 AMS 4971A		(6-6-2)	—	US	AMS 9971	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, airborne equipment
722 AMS 4979		(6-6-2)	C-0042	US	MIL-T-81556	Alpha + beta	IBIBA P SHE	Pressure vessels, rocket motor cases, ordnance equipment
723 Carpenter Titanium 6-6-2		(6-6-2)	—	US	MIL-T-81556	Alpha + beta	IBIBA P SHE	High mechanical properties with no H.T. good strength weight ratio to 750 F (399 C)
724 MIL-T-81556 Type III Comp C		(6-6-2)	C-0009	US	MIL-T-46035	Alpha + beta	EBAT SHFW rings	For high strength in annealed condition High strength weight ratio to 750 F (399 C)
725 OMC Ti-6Al-6V-2Sn		(6-6-2)	—	US	AMS 4936	Alpha + beta	SHST P	Pressure vessels, ordnance components, rocket motor case
726 OMC Ti-6Al-6V-2Sn		(6-6-2)	—	US	AMS 4918D	Alpha + beta	IBIBA P SHE	For high strength in annealed condition High strength weight ratio to 750 F (399 C)
727 AMS 4936		(6-6-2)	—	US	AMS 4918D	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
728 MIL-T-46035 Type III Comp E		(6-6-2)	—	US	MIL-T-46035	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
729 Ti-6Al-6V-2Sn		(6-6-2)	C-0001	US	AMS 4918C	Alpha + beta	IBIBA FG PESH W	Pressure vessels, ordnance components, rocket motor case
730 RMI 6Al-6V-2Sn		(6-6-2)	C-0003	US	AMS 4978A	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
731 AMS 4978A		(6-6-2)	—	US	AMS 4978A	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
732 Carpenter Titanium 6-6-2		(6-6-2)	—	US	AMS 4971 R4	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
733 Tikhutan LT 33		(6-6-2)	C-0042	GY	DIN 3 7174	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
734 Fuchs TA 66		(6-6-2)	C-0054	GY	AMS 4918 SH	Alpha + beta	FG	Premium strength alloy, good heat treatment response, forgable
735 Armetco Ti-6Al-6V-2Sn		(6-6-2)	C-0005	US	AMS 4918 SH	Alpha + beta	IBIBA P SHE	Aircraft structural parts, intricate quality forgings
736 UT662		(6-6-2)	C-0020	FR	ASTM B381	Alpha + beta	BA FG SH P	Rocket engine cases, ordnance and aircraft components
737 MMA-5158		(6-6-2)	C-0002	US	AECMA	Alpha + beta	IBIBA P E W FG	Pressure vessels, ordnance components, rocket motor case
738 Ti P 64		(6-6-2)	—	FR	—	Alpha + beta	IBIBA P SHE	Aircraft and engine forgings, cryogenic equipment
739 ALLVAC 6-6-2		(6-6-2)	C-0008	US	LW 3 7174	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
740 LW 3 7174		(6-6-2)	—	GY	—	Alpha + beta	IBIBA P SHE	Pressure vessels, ordnance components, rocket motor case
741 T-A6VE		(6-6-2)	—	FR	—	Alpha + beta	—	Pressure vessels, ordnance components, rocket motor case
Ti-6Al-6V-6Sn-2-Zr-6		—	C-0020	FR	—	Alpha + beta	—	Pressure vessels, ordnance components, rocket motor case
742 UTAGV6SN2		—	—	UR	—	Alpha + beta	IBIBA SH T	Pressure vessels, ordnance components, rocket motor case
Ti-6Al-6Zr-1.5-Mn-1.5		—	—	UR	—	Alpha + beta	—	Pressure vessels, ordnance components, rocket motor case
743 OT4-2 (Note)		—	—	UR	—	Alpha + beta	—	Pressure vessels, ordnance components, rocket motor case
Ti-6Al-6Zr-5W-1-Si-0.2		—	—	UR	—	Alpha + beta	—	Pressure vessels, ordnance components, rocket motor case
744 IMI-684		(IMI-684)	C-0013	UK	DTD M200	Alpha + beta	BA	Weldable good strength alloy Creep resistant to 932 F (500 C)
745 T-A625W		(IMI-684)	—	FR	AIR	Alpha + beta	—	Weldable good strength alloy Creep resistant to 932 F (500 C)
746 DTD M200		(IMI-684)	—	UK	DTD M200	Alpha + beta	—	Weldable good strength alloy Creep resistant to 932 F (500 C)
Ti-6Al-6Zr-5W-1-Si-0.2		—	—	UR	—	Alpha + beta	SH	Fasteners aircraft structures
747 AT6		—	—	UR	—	Alpha + beta	—	Fasteners aircraft structures
Ti-6Al-6.5-Mo-1.2-Cb/Nb-2-Ta-1		—	C-0001	US	—	Alpha + beta	BI BA P	For pressure hulls tough shock resistant
748 Ti-6Al-2Cb-1Ta		—	—	US	—	Alpha + beta	IC	For pressure hulls tough shock resistant
Ti-6Al-6.5-Mo-3.5-Zr-2 (or Sn)-Si-0.25		—	—	US	—	Alpha + beta	IBIBA	For pressure hulls tough shock resistant
749 VT9L		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
750 VT9		—	—	UR	—	Alpha + beta	IBIBA P SHE	For pressure hulls tough shock resistant
Ti-6Al-6.5-V-1-Mo-1-Zr-2		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
751 VT20		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
Ti-6Al-7-Cb/Nb-2-Ta-1		—	C-0001	US	—	Alpha + beta	—	For pressure hulls tough shock resistant
752 Ti-7Al-2Cb-1Ta		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
Ti-6Al-7-Cr-0.3-8		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
753 AT-8-N		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
Ti-6Al-7-Cr-0.6-8		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
754 AT-6-V		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
755 AT-8-S		—	—	UR	—	Alpha + beta	—	For pressure hulls tough shock resistant
Ti-6Al-7-Mo-0.5-Sn-2-Si-0.5		(CP)	—	FR	AIR	Alpha + beta	—	For pressure hulls tough shock resistant
756 T-A7DE		(CP)	—	FR	AIR	Alpha + beta	—	For pressure hulls tough shock resistant
Ti-6Al-7-Mo-3		—	C-0046	GY	—	Alpha + beta	—	For pressure hulls tough shock resistant
757 Eitanit AB 210		—	—	GY	—	Alpha + beta	—	For pressure hulls tough shock resistant

BA bars BI-billet C casting E extrusion F foil FG-forging I-ingot P-plate RD-rod SH-sheet
 ST-strip T-tubing W-wire con. condensers Hexch-heat exchanger ST-seamless tubing WT-welded tubing

*Noncurrent standard or alloy designation
 **Current standard or alloy designation, not to be used on new designs
 ...These alloys also known as alpha-dispersoid types
 NOTE OT4-2 alloy is listed with and without Zr

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS											INTERSTITIAL ELEMENTS					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen WT.% (ppm)	Nitrogen WT.% (ppm)	Carbon
Ti-Al 7-Mo 4																		
758	Contimet AlMo 74	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.30	0.0125 (125)	0.05 (500)	0.08
759	UTADV	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.05 (500)	0.08
760	Republic RS-135*	63-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.10-0.20	—	0.015 (150)	0.05 (500)	0.10
761	Contimet AlMo 74	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.30	0.0125 (125)	0.05 (500)	0.08
762	MMA-7146	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.10	0.25	0.20	0.0125 (125)	0.02 (200)	0.05
763	Fuchs TA 74	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.07 (700)	0.08
764	RM17Al-4Mo	65-75	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	—	0.010 (100)	0.05 (500)	0.08
765	Ti-7Al-4Mo	65-73	—	3.4-4.5	—	—	—	—	—	—	—	—	—	0.25 max	—	0.0125 (125)	0.05 (500)	0.08
766	T-AT	70	—	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
767	OMC Ti-7Al-4Mo	70	—	4.0	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.07 (700)	0.08
768	Tikutan LT 32	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
769	AMS 4970C	65-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	0.0125 (125)	0.07 (700)	0.15
770	Crucible C-135AMO	63-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.10-0.20	—	0.015 (150)	0.05 (500)	0.10
771	Republic RS-135*	63-73	—	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 7-Mo 4-Si 0.25																		
772	VT8	60-73	—	2.8-3.8	—	0.5	—	—	0.2-0.4	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10
Ti-Al 7-Zr 12																		
773	RM17Al-12Zr	70	—	—	—	12.0	—	—	—	—	—	—	—	—	—	—	—	0.04
774	Ti-7Al-12Zr	65-75	—	—	—	11.5-12.5	—	—	—	—	—	—	—	0.015	0.10	0.010 (100)	0.03 (300)	0.04
775	OMC-Ti-7Al-12Zr*	70	—	—	—	12.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 7-(Cr,Fe,Si) 1.5																		
776	AT8	65-80	—	—	—	—	—	0.4-0.9	0.25-0.60	—	—	—	—	0.25-0.60	—	0.010 (100)	0.30	—
Ti-Al 7.5-Mo 0.5-Zr 11-Cb/Nb 1-Si 0.15																		
777	VT18	72-82	—	0.2-1.0	—	10.0-12.0	—	—	0.18-0.50	—	0.05-1.50	—	—	—	—	—	—	—
Ti-Al 8-Cb/Nb 2-Ta 1																		
778	OMC-Ti-8Al-2Cb-1Ta*	80	—	—	—	—	—	—	—	—	2.0	Ta 1	—	—	—	—	—	—
779	Ti-8Al-2Cb-1Ta	80	—	—	—	—	—	—	—	—	2.0	Ta 1	—	—	—	—	—	—
Ti-Al 8-V 1-Mo 1																		
780	Republic RS-811X*	80	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	0.08
781	UTADV	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.006 (60)	0.05 (500)	0.08
782	MMA-8116	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.20	0.010 (100)	0.02 (200)	0.05
783	Contimet AlMoV 8-1-1	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.015 (150)	0.05 (500)	0.08
784	Ti P 66	80	1.0	1.0	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.08
785	LW 37134	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.08
786	Crucible 8Al-1Mo-1V	80	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
787	Armco Ti-8Al-1Mo-1V*	80	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
788	T-ABOV	80	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
789	Tikutan LT 22	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.08
790	AMS 4915C	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
791	AMS 4972A	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
792	MIL-T-9046H Type II Comp F	73-83	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
793	ALLVAC 8-1-1	80	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
794	RM18Al-1Mo-1V	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.0125 (125)	0.05 (500)	0.08
795	AMS 4916C	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
796	MIL-T-81556 Type II Comp C	73-83	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
797	AMS 4973A	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
798	UTADV	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
799	AMS 4955	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
800	OMC Ti-8Al-1Mo-1V	80	1.0	1.0	—	—	—	—	—	—	—	—	—	0.30 max	—	0.0125 (125)	0.05 (500)	0.08
801	Ti-8Al-1Mo-1V	73-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 8-V 10																		
802	Ti-8Al-10V	80	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 8-V 1-Mo 1																		
803	Contimet AlMoV 8-1-1	75-85	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.015 (150)	0.05 (500)	0.08
Ti-Al 8-Zr 8-Cb/Nb 1																		
804	MST 681	75-85	—	—	—	7.5-8.5	—	—	—	—	0.60-1.40	Ta-Cb 1.40	—	—	—	—	—	—

Information on this group of alloys is continued on page below
 *Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-4V								
758	Continental AlMo 74	(7-4)	C-0046	GY	—	Alpha + beta	IBI BAP	For forgings, good stability to 1700 F (500 C), deep hardening
759	UTAD	(7-4)	C-0020	FR	—	Alpha + beta	BA FG	Mediocre weldability. High mechanical properties for forgings
760	Republic RS-135*	(7-4)	C-0011	US	AMS 4970	Alpha + beta	BA FG	For jet engine and missile components, heat resistant to 1000 F (538 C)
761	Continental AlMo 74	(7-4)	C-0046	GY	—	Alpha + beta	BA P.F.G.E	For forgings. Has high strength and deep hardening properties.
762	MMA-7146	(7-4)	C-0002	US	—	Alpha + beta	IBI BAP.T.E.FG	Compressor wheels and blades, aircraft gas turbine engines
763	Fuchs TA 74	(7-4)	C-0054	GY	AMS	Alpha + beta	FG	Rather large sections can be heat treated
764	RMI 7Al-4Mo	(7-4)	C-0003	US	AMS 4970C	Alpha + beta	IBI BAP	For aircraft and jet engine components
765	Ti-7Al-4Mo	(7-4)	C-0001	US	AMS 4970C	Alpha + beta	IBI BAP.W.E	Turbine engine and airframe applications
766	Ti-7Al	(7-4)	—	FR	AIR	Alpha + beta	—	—
767	OMC Ti-7Al-4Mo	(7-4)	C-0009	US	AMS 4970C	Alpha + beta	IBI BAP	For aircraft turbines, compressor blades and wheels
768	Tikutan LT 32	(7-4)	C-0019	GY	—	Alpha + beta	—	—
769	AMS 4970C	(7-4)	—	US	AMS 4970C	Alpha + beta	FG.BA.W.BI	For strength to 900 F (482 C)
770	Crucible C-135AMO	(7-4)	C-0004	US	AMS 4970C	Alpha + beta	BA.BI.R.FG	Jet engine discs and blades, airframe forging, fastener, ordnance
771	Republic RS-135*	(7-4)	C-0011	US	—	Alpha + beta	BA FG	Jet engine and missile components, aircraft structures, corrosion resistant
Ti-6Al-4V-0.25								
772	VT8	(7-4) (-Si)	—	UR	—	Alpha + beta	IBI BAE	—
Ti-6Al-2Zr-12								
773	RMI 7Al-12Zr	(7-12)	C-0003	US	AMS 4942	—	—	—
774	Ti-7Al-12Zr	(7-12)	C-0001	US	—	Alpha	BI.BA.FG.SH.ST	Turbine jet engines, airframe components, high creep strength
Ti-6Al-2Zr-12-0.15								
775	OMC Ti-7Al-12Zr*	(7-12)	C-0009	US	—	Alpha	—	—
Ti-6Al-4V-0.15								
776	AT8	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures, experimental alloy
777	VT18	—	—	UR	—	Near-alpha	IBA	—
Ti-6Al-2V-1								
778	OMC Ti-6Al-2V-1Ta*	—	C-0009	US	—	—	—	—
779	Ti-8Al-2Cu-1Ta	—	C-0001	US	—	—	—	—
Ti-6Al-4V-1								
780	Republic RS-811X*	(8-1-1)	C-0011	US	—	—	—	—
781	UTAD	(8-1-1)	C-0020	FR	—	Near-alpha	BA FG	For jet engine components, blades, discs, spacers
782	MMA-8116	(8-1-1)	C-0002	US	AMS 4915	Near-alpha	IBI BAP.S.H.E	Forgings used in aeronautical industry
783	Continental AlMoV 8-1-1	(8-1-1)	C-0046	GY	AMS 4915	Near-alpha	BA.SH.ST.P.W.F.G.E.T	Jet engine and missile components, discs and blades
784	Ti-P 66	(8-1-1)	—	FR	AECMA	Near-alpha	All forms	Low density and high modulus, important in aircraft industry
785	LW 3.7134	(8-1-1)	—	GY	LW 3.7134	Alpha + beta	IBI BAP.S.H.E	—
786	Crucible 8Al-1Mo-1V	(8-1-1)	C-0004	US	—	Near-alpha	IBI BAP.S.H.E	—
787	Armco Ti-8Al-1Mo-1V*	(8-1-1)	C-0005	US	AMS 4972.BA	Near-alpha	IBI BAP.S.H.E	Gas turbine engines, at elevated temperatures, high stiffness
788	Ti-8Al-1V	(8-1-1)	—	FR	AIR	Near-alpha	—	—
789	Tikutan LT 22	(8-1-1)	C-0019	GY	—	Alpha + beta	—	—
790	AMS 4915C	(8-1-1)	—	US	AMS 4915B	Near-alpha	SH.ST.P	For high strength to 800 F (427 C), limited fracture toughness
791	AMS 4972A	(8-1-1)	—	US	AMS 4972A	Near-alpha	BA.W.F.W.rings	For high strength to 800 F (427 C), limited fracture toughness
792	MIL-T-9046H Type II Comp F	(8-1-1)	—	US	MIL-T-9046H	Alpha	IBI BAP.S.H.E	—
793	ALLVAC 8-1-1	(8-1-1)	C-0008	US	AMS 4915B	Near-alpha	IBI BAP.S.H.E	—
794	RMI 8Al-1Mo-1V	(8-1-1)	C-0003	US	AMS 4916B	Alpha + beta	IBI BAP.S.H.E	Jet engine and aircraft parts, good creep properties
795	AMS 4916C	(8-1-1)	—	US	AMS 4916B	Near-alpha	SH.ST.P	For high strength and fracture toughness to 800 F (427 C)
796	MIL-T-81556 Type II Comp C	(8-1-1)	—	US	MIL-T-81556	Alpha	IBI BAP.S.H.E	For high strength to 800 F (427 C)
797	AMS 4973A	(8-1-1)	—	US	AMS 4973A	Near-alpha	FG.BI	—
798	UTAD	(8-1-1)	C-0020	FR	AIR	Near-alpha	—	—
799	AMS 4955	(8-1-1)	—	US	AMS 4955	Near-alpha	IBI BAP.S.H.E	Welding wire, primarily for inert arc welding
800	OMC Ti-8Al-1Mo-1V	(8-1-1)	C-0009	US	AMS 4915B	Near-alpha	IBI BAP.S.H.E	High temperature jet engine forging alloy, turbine parts
801	Ti-8Al-1Mo-1V	(8-1-1)	C-0001	US	AMS 4912A	Near-alpha	BA FG.SH.P.ST	Jet engine components, discs, spacers, blades
Ti-6Al-4V-10								
802	Ti-8Al-10V	—	C-0011	US	—	—	—	Rocket motor cases, corrosion resistant applications
Ti-6Al-4V-1-Mo-1								
803	Continental AlMoV 8-1-1	(8-1-1)	C-0046	GY	—	Near-alpha	IBI BAP.S.H.E	Has no age hardening capability, high modulus and low density
Ti-6Al-2Zr-8Cu-Nb-1								
804	MST 881	—	C-0003	US	—	—	BI.BA.FG.P	Jet engine and guided missile components, high temperature

*Noncurrent standard or alloy designation

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, WT—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen WT.% (ppm)	Nitrogen WT.% (ppm)	Carbon
Ti-Al 20-12																		
805	Titanium EP 20-2	20.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 30-Cb/Nb 10																		
806	Ventron 88394, 60 30 10	30.0	—	—	—	—	—	—	—	—	—	10.0	—	—	—	—	—	—
Ti-Al 35																		
807	Ventron 88393, 65 35	35.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 65-Zr 34																		
808	Ti-Zr	—	—	—	—	34.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 9																		
809	Ti-Brush 50	0.8-1.0	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.02 (200)	0.10	—
Ti-Cb/Nb 20-Ta 10																		
810	Ventron 88398, 70 20 10	—	—	—	—	—	—	—	—	—	—	20.0	Ta 10	—	—	—	—	—
Ti-Cb/Nb 45																		
811	AMS 4982	—	—	—	—	—	0.01	0.02	0.04	—	42.0-47.0	Total 0.40	0.03	0.20	0.0035 (35)	0.03 (300)	0.04	—
Ti-Co 6																		
812	Ventron 88397, 94 6	—	—	—	—	—	—	—	—	—	—	—	Co 6.0	—	—	—	—	—
813	Ti-Co	—	—	—	—	—	—	—	—	—	—	—	Co 6.0	—	—	—	—	—
Ti-Cr 27-Fe 1.8																		
814	Elcan AB 102*	—	—	—	—	—	—	2.70	—	—	—	—	—	1.80	0.50	0.015 (150)	0.10	0.10
Ti-Cr 3-Fe 1.5																		
815	Ti-150A	—	—	—	—	—	—	2.4-3.1	—	—	—	—	W 0.2 max	12-18	0.35	—	0.10	0.07
Ti-Cr 3.5-Fe 1.5																		
816	Republic RS-110*	—	—	—	—	—	—	3.0-4.0	—	—	—	—	—	10-20	—	—	—	0.10
Ti-Cr 10																		
817	Titanium EP 90-10	—	—	—	—	—	—	9.8-10.2	—	—	—	—	—	0.005-0.05	—	—	—	—
Ti-Cr 20																		
818	Ventron 88396, 80 20	—	—	—	—	—	—	20.0	—	—	—	—	—	—	—	—	—	—
Ti-Cu 2.5																		
819	Contimet Cu 2	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
820	Fuchs TC 2	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
OMC-Ti-2Cu*																		
821	—	—	—	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—
RMI 2Cu																		
822	—	—	—	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—
Ti-U2																		
823	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
20-30																		
824	UTC	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
20-30																		
825	Tikulan LT 25	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
DTD 5263*																		
826	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
DTD 5233*																		
827	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
DTD 5253*																		
828	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
DTD 5243*																		
829	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
DTD 5133*																		
830	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
DTD 5123*																		
831	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
Hyllite 25*																		
832	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
IMI-230																		
833	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.015 (150)	—	—
LW 37124																		
834	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
BS 2TA 24																		
835	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.015 (150)	—	—
BS TA 52																		
836	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
BS 2TA 22																		
837	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
BS 2TA 23																		
838	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
BS TA 53																		
839	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
BS 2TA 21																		
840	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
Ti P 11																		
841	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
BS TA 58																		
842	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
BS TA 54																		
843	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
Contimet Cu 2																		
844	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	0.20	0.010 (100)	—	—
L-7501, Ti-25Cu																		
845	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—	—
BS TA 55																		
846	—	—	—	—	—	—	—	20-30	—	—	—	—	—	0.20	—	0.015 (150)	—	—

Information on this group of alloys is continued on page below.
 *Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Al 20-9-2								
805	Titanium EP 20-2	—	C-0049	US	—	—	Electrolytic titanium	Aircraft and missile components, high temperature applications
Ti-Al 30-Cb/Nb 10								
806	Ventron 88394, 60 30 10	—	C-0052	US	—	—	Powder	For scientific applications
Ti-Al 3								
807	Ve Iron 88393, 65 35	—	C-0052	US	—	—	Powder	For scientific applications
Ti-Al 64-Zr 34								
808	Ti-2	—	C-0009	US	—	—	Powder-100 mesh	Made by hydride-crush-dehydride process
Ti-Al 9								
809	Ti-Brush 50	—	C-0010	US	—	Alpha	—	Low density, aircraft and missile components, weldability
Ti-Cb/Nb 20-Ti 10								
810	Ventron 88398, 70 20 10	—	C-0052	US	—	—	Powder	For scientific applications
Ti-Cb/Nb 45								
811	AMS 4982	—	—	US	AMS 4982	—	BA W	For high strength/weight ratio to 800 F (427 C) Fasteners cold form
Ti-Co 6								
812	Ventron 88397, 94 6	—	C-0052	US	—	—	Powder	For scientific applications
813	Ti-Co	—	C-0057	US	—	—	Powder-325 mesh	—
Ti-Cr 2.7-Fe 1.8								
814	Eltanit AB 102*	—	C-0046	GY	—	—	—	—
Ti-Cr 3-Fe 1.5								
815	Ti-150A	—	C-0001	US	—	—	FG BI, BAP	Discs blades for jet engines high temperature forgings
Ti-Cr 3.5-Fe 1.5								
816	Republic R5-110*	—	C-0011	US	—	—	—	For jet engine components Corrosion and heat resistant
Ti-Cr 10								
817	Titanium 5P 90-10	—	C-0049	US	—	—	Electrolytic titanium	Pressure vessels, aircraft skins fasteners
Ti-Cr 20								
818	Ventron 88396, 80 20	—	C-0052	US	—	—	Powder	For scientific applications
Ti-Cu 2.5								
819	Contimet Cu 2	—	C-0046	GY	LW 3 7124	Alpha dispersoid	BA SH ST P W FG, T	Combines ductility and weldability of CP titanium with high temperature strength
820	Fuchs TC 2	—	C-0054	GY	BS 2TA 24	Alpha dispersoid	FG	Weldable, excellent forgability heat treatable
821	OMC-Ti-2Cu*	—	C-0009	US	—	Alpha dispersoid	—	—
822	RMI 2Cu	—	C-0003	US	AIR	Alpha dispersoid	BI, BAP, S	—
823	Ti-2	—	—	FR	—	Alpha dispersoid	—	—
824	UTC	—	C-0020	FR	DIN 3 7124	Alpha dispersoid	BA FG, SH P W	Weldable and formable in quenched condition to 662 F (350 C)
825	Tikuran LT 25	—	C-0019	GY	—	Alpha dispersoid	—	—
826	DTD 5263*	(IMI-230)	—	UK	DTD 5263*	Alpha dispersoid	BI, BA W P, SH	—
827	DTD 5233*	(IMI-230)	—	UK	DTD 5233*	Alpha dispersoid	BI, BA W P, SH	—
828	DTD 5253*	(IMI-230)	—	UK	DTD 5253*	Alpha dispersoid	BI, BA W P, SH	—
829	DTD 5243*	(IMI-230)	—	UK	DTD 5243*	Alpha dispersoid	SH	—
830	DTD 5133*	(IMI-230)	—	UK	DTD 5133*	Alpha dispersoid	BA	—
831	DTD 5123*	(IMI-230)	—	UK	DTD 5123*	Alpha dispersoid	—	—
832	HyLite 25*	—	C-0016	UK	—	Alpha eutectic	—	Chemical industry application ductile weldable
833	IMI-230	—	C-0013	UK	2TA21 22 23	Alpha dispersoid	BA BI W P, SH E	Corrosion resistant Formable
834	LW 3 7124	—	—	GY	LW 3 7124	Alpha dispersoid	BI, BA P, SH	Forgings
835	BS 2TA 24	(IMI-230)	—	UK	BS 2TA 24	Alpha dispersoid	FG	—
836	BS TA 52	(IMI-230)	—	UK	BS TA 52	Alpha dispersoid	SH ST	—
837	BS 2TA 22	(IMI-230)	—	UK	BS 2TA 22	Alpha dispersoid	BA sections mach	Forgings and forging stock
838	BS 2TA 23	(IMI-230)	—	UK	BS 2TA 23	Alpha dispersoid	FG stock	—
839	BS TA 53	(IMI-230)	—	UK	BS TA 53	Alpha dispersoid	BA sections mach	—
840	BS 2TA 21	(IMI-230)	—	UK	BS 2TA 21	Alpha dispersoid	SH ST	—
841	Ti P 11	(IMI-230)	—	FR	AECMA P 11	Alpha dispersoid	All forms	Corrosion resistant formable
842	BS TA 58	(IMI-230)	—	UK	BS TA 58	Alpha dispersoid	P	Plate
843	BS TA 54	(IMI-230)	—	UK	BS TA 54	Alpha dispersoid	FG stock	Forgings forging stock
844	Contimet Cu 2	—	C-0046	GY	—	Alpha dispersoid	BI, BA P, SH	Combines good ductility and weldability Strength to 662 F (350 C)
845	L-7501 Ti-25Cu	—	—	SP	—	Alpha dispersoid	—	—
846	BS TA 55	(IMI-230)	—	UK	BS TA 55	Alpha dispersoid	FG	Forgings

*Noncurrent standard or alloy designation

BA—bars BI—billet C—casting E—extrusion, F—foil FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip T—tubing W—wire con—condensers Hexch—heat exchanger, ST—seamless tubing, V/T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										Interstitial Elements						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Mn 3-Cr 3-Fe 3																		
847	IMP-6-1	—	—	—	—	—	3.0	3.0	—	—	—	—	—	3.0	—	—	—	—
Ti-Mn 8																		
848	OMC-Ti-8Mn*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	—	—	—
849	Eltanit AB 106*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	—	—	—
850	Republic RS-120*	—	—	—	—	—	6.0-8.0	—	—	—	—	Total 0.7	—	—	0.015 (150)	0.10	0.10	
851	Republic RS-110A*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	—	—	0.10
852	Crucible C-110M	—	—	—	—	—	7.0-9.0	—	—	—	—	—	—	—	—	—	—	0.10
853	IMI 8Mn	—	—	—	—	—	6.5-9.0	—	—	—	—	—	—	—	0.20	0.015 (150)	0.05 (500)	0.08
854	Ti-8Mn	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	0.015 (150)	0.07 (700)	0.20
855	AMS 490RC	—	—	—	—	—	6.5-9.0	—	—	—	—	Total 0.40	0.50	0.20	0.015 (150)	0.05 (500)	0.08	
Ti-Mn 10																		
856	MGMTS	—	—	—	—	—	10.0	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 0-Cr 0-Cb/Nb 0																		
857	ANS	—	—	Mo	—	—	—	Cr	—	—	—	—	Ti: 52	—	—	—	—	—
Ti-Mo 1.5-Zr 2.5																		
858	AT2-2	—	—	1.5	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 1.8-Cr 2-Fe 2																		
859	Ti-140A*	—	—	1.5-2.5	—	—	—	15-25	—	—	—	—	W 0.1 max	15-25	0.20	—	0.10	0.10
Ti-Mo 2-Cr 2-Fe 2																		
860	AMS 4923A*	—	—	1.5-3.0	—	—	—	15-3.0	—	—	—	—	Total 0.40	15-3.0	0.20	0.0125 (125)	0.10	0.10
861	Eltanit AB 104*	—	—	2.0	—	—	—	2.0	—	—	—	—	—	2.00	0.50	0.015 (150)	0.10	0.10
Ti-Mo 2.5																		
862	T3M*	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 8-Zr 4-Fe 26																		
863	Ti-Zr-Fe-Mo	—	—	8.0	—	4.0	—	—	—	—	—	—	—	26.0	—	—	—	—
Ti-Mo 10																		
864	Ti-Mo	—	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 11.5-Sn 4.5-Zr 6																		
865	OMC-Ti-11.5Mo-6Zr-4.5Sn	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
866	Amco Beta 3*	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 11.5-Sn 4.5-Zr 6																		
867	MIL-T-9046H Type IV Comp B	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10	
868	ASTM B338 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.0	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
869	ASTM B265 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
870	MIL-T-9046H Type IV Comp B	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	0.35	0.18	0.015 (150)	0.05 (500)	0.10
871	ASTM B337 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
872	AMS 4980A	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	Total 0.40	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
873	TD122RE	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
874	ASTM B337 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	Total 0.40	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
875	AMS 4977A	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	0.35	0.10	0.020 (200)	0.05 (500)	0.10
876	T-D112R6E4	—	—	11.5	4.5	6.0	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
877	ASTM B348 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	—	—	—	—	—
878	Crucible Beta III	—	—	11.5	4.5	6.0	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
879	ASTM B265 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10	
880	ASTM B338 Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.0	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
Ti-Mo 15																		
881	IMI-205*	—	—	15.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Mo 32-Cb/Nb 1.5																		
882	4203	—	—	32.0	—	—	—	—	—	—	1.5	—	—	—	—	—	—	—
Ti-Mo 32																		
883	4201	—	—	31.0-33.0	—	0.30	—	—	0.10	—	—	—	—	0.25	0.12	0.012 (120)	0.04 (400)	0.10
Ti-Ni 0.2																		
884	IMP-1	—	—	—	—	—	—	—	—	—	—	Ni 0.22	—	—	0.47	0.15	0.08	0.05
Ti-Ni 1-2																		
885	Ti-2Ni	—	—	—	—	—	—	—	—	—	—	Ni 2.0	—	—	—	—	—	—
Ti-Ni 50																		
886	Ti-Ni	—	—	—	—	—	—	—	—	—	—	Ni 50.0	—	—	—	—	—	—

Information on this group of alloys is continued on page below
 *Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Mo 3-Cr 3-Fe 3								
847	IMP-6-1	(8Mn)	—	UR	—	Alpha + beta	Powder metal alloy	Powder metallurgy alloy
Ti-Mn 8								
848	OMC-Ti-8Mn*	(8Mn)	C-0009	US	AMS 4908B	Alpha + beta	I,SH,ST	Aircraft skin and aircraft structural components
849	Elantit AB 106*	(8Mn)	C-0046	GY	—	Alpha + beta	I,SH,ST	Aircraft skins, jet engine components, aircraft fueling, shrouds
850	Republic RS-120*	(8Mn)	C-0011	US	AMS 4908B	Alpha + beta	BA,FG,P,SH,I,W,RS	Aircraft skins, structural braces, shrouds, ducts
851	Republic RS-110A*	(8Mn)	C-0011	US	AMS 4908B	Alpha + beta	SH,ST,P	Skins, primary structural airframe members, stiffeners
852	Crucible C-110M	(8Mn)	C-0004	US	AMS 4908B	Alpha + beta	SH,ST	Aircraft skin and aircraft structural components
853	RMI 8Mn	(8Mn)	C-0003	US	AMS 4908B	Alpha + beta	I,SH,ST	Aircraft skins, aircraft structural members
854	Ti-8Mn	(8Mn)	C-0001	US	AMS 4908B	Alpha + beta	I,SH,ST,P	For good formability and strength to 600 F (316 C).
855	AMS 4908C	(8Mn)	—	US	AMS 4908C	Alpha + beta	SH,ST	Master alloy of titanium
Ti-Mo 10								
856	MGMTS	—	—	UR	—	—	—	—
857	AN5	—	—	UR	—	Beta	—	—
Ti-Mo 0-Cr 0-Cb/Nb 0								
858	AT2-2	—	—	UR	—	Alpha	SH	Jet engine compressor components
Ti-Mo 1.5-Zr 2.5								
859	Ti-140A*	—	C-0001	US	—	—	FG,BA,P	For high strength to 450 F (232 C) and oxidation resistance to 600 F (316 C).
Ti-Mo 2-Cr 2-Fe 2								
860	AMS 4923A*	—	—	US	AMS 4923A*	—	BA,BI,FG	—
861	Elantit AB 104*	—	C-0046	GY	—	—	—	—
Ti-Mo 2.5								
862	T3M*	—	—	UR	—	Alpha + beta	—	Early experimental titanium alloy
Ti-Mo 6-Zr 4-Fe 25								
863	Ti-Zr-Fe-Mo	—	C-0009	US	—	—	Powder-28 + 100 mesh	Made by hydride-crush-dehydride process
Ti-Mo 10								
864	Ti-Mo	—	C-0057	US	—	—	Powder-325 mesh	—
Ti-Mo 11.5-Sn 4.5-Zr 5								
865	OMC-Ti-11.5Mo-6Zr-4.5Sn	(Beta III)	C-0009	US	AMS 4977A	Beta	BI,B,W,P,SH,ST,F,T	Age hardenable to 135 ksi. Good cold formability
866	Armco Beta 3*	(Beta III)	C-0005	US	AMS 4977A	Beta	BI,BA,W,P,SH,ST,F,T	Standard for seamless and welded tubing for heat exchangers and condensers
867	MIL-T-9046H Type IV Comp B	(Beta III)	—	US	MIL-T-9046H	Beta	S.T.-W.T.-H,exch.con	Standard for strip, sheet, and plate of this composition
868	ASTM B338, Grade 10	(Beta III)	—	US	ASTM B338	Beta	SH,ST,P	Standard for seamless and welded pipe of this composition
869	ASTM B265, Grade 10	(Beta III)	—	US	ASTM B265	Beta	BI,BA,W,P,SH,ST,F,T	For high strength/weight ratio to 700 F (371 C) after precipitation heat treatment
870	MIL-T-9046H Type IV Comp B	(Beta III)	—	US	MIL-T-9046H	Beta	BA,W	Good salt water and hot salt corrosion resistance. Cold formable
871	ASTM B337, Grade 10	(Beta III)	—	US	ASTM B337	Beta	—	Standard for seamless and welded pipe of this composition
872	AMS 4980A	(Beta III)	C-0020	FR	AMS 4980A	Beta	—	Standard for seamless and welded pipe of this composition
873	TD12ZRE	(Beta III)	—	US	ASTM B337	Beta	Seamless and welded pipe	For high strength weight ratio to 700 F (371 C) Fasteners Deep hardening
874	ASTM B337, Grade 10	(Beta III)	—	US	ASTM B337	Beta	BA,W	Standard for bars and billets of this composition
875	AMS 4977A	(Beta III)	—	US	AMS 4977A	Beta	—	Aircraft parts and fasteners
876	TD12ZRE	(Beta III)	—	FR	—	Beta	SH,ST,F,O,T,P,W	Standard for strip, sheet, and plate of this composition
877	ASTM B348, Grade 10	(Beta III)	—	US	ASTM B348	Beta	SH,ST,P	Standard for seamless and welded tubing for heat exchangers and condensers
878	Crucible Beta III	(Beta III)	C-0004	US	AMS	Beta	S.T.-W.T.-H,exch.con	—
879	ASTM B265, Grade 10	(Beta III)	—	US	ASTM B265	Beta	—	—
880	ASTM B338, Grade 10	(Beta III)	—	US	ASTM B338	Beta	—	—
Ti-Mo 15								
881	IMI-205*	—	C-0013	UK	—	Beta	—	—
Ti-Mo 32-Cb/Nb 1.5								
882	4203	—	—	UR	—	Beta	—	—
Ti-Mo 32								
883	4201	—	—	UR	—	Beta	—	—
Ti-Mo 18.2								
884	IMP-1	—	—	UR	—	Alpha	—	Early alpha alloy
Ti-Mo 1-2								
885	Ti-2H	—	C-0001	US	—	Alpha dispersoid	—	—
Ti-Ni 50								
886	Ti-Ni	—	C-0064	US	—	—	Powder (degassed)	Scientific applications. Also composition of Nitinol type alloys

*Noncurrent standard or alloy designation

BA—bars BI—billet C—casting E—extrusion F—forging I—ingot P—plate RD—rod SH—sheet
ST—strip T—tubing W—wire con—condensers H,exch—heat exchanger, ST—seamless tubing, WT—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. ≤ (BALANCE TITANIUM)																		
ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS								
Index No.	Alloy Designation	Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Pd 0.15-0.20																		
887	ASTM B337, Grade 11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
888	ASTM B265, Grade 11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.18	0.015 (150)	0.03 (300)	0.10
889	ASTM B337, Grade 11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
890	ASTM B265, Grade 11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.0125 (125)	0.05 (500)	0.10
891	L-7021, Ti-99.3 Pd	—	—	—	—	—	—	—	—	—	0.15-0.20	—	—	0.30	0.20	0.015 (150)	0.03 (300)	0.08
892	RMI 02Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
893	ASTM B265, Grade 7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
894	ASTM B338, Grade 11	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.20	—	0.015 (150)	0.03 (300)	0.08
895	TI-0.2Pd	—	—	—	—	—	—	—	—	—	Pd	—	—	—	—	—	—	—
896	TTC 22B Casting	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.0125 (125)	0.03 (300)	0.10
897	ASTM B348, Grade 11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	0.25	0.30	0.015 (150)	0.03 (300)	0.10
898	ASTM B338, Grade 7	—	—	—	—	—	—	—	—	—	0.20	—	—	0.20	—	—	—	0.08
899	HA-1940PD*	—	—	—	—	—	—	—	—	—	0.15-0.20	—	—	0.20	—	—	—	0.08
900	HA-Ti-C-15Pd*	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.0125 (125)	0.03 (300)	0.10
901	ASTM B348, Grade 7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	0.25	0.30	0.015 (150)	0.03 (300)	0.10
902	ASTM B337, Grade 7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	0.25	0.30	0.015 (150)	0.03 (300)	0.10
903	ASTM B338, Grade 7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	0.20	0.16	0.015 (150)	0.02 (200)	0.05
904	MMA-1342	—	—	—	—	—	—	—	—	—	0.15	—	Total 0.10	0.30	0.25	0.015 (150)	0.03 (300)	0.10
905	ASTM B337, Grade 7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	—	—	—	—	—
906	Crucible Ti-0.15Pd	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
907	Contimet Pd 02/30	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
908	Contimet Pd 02/35	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
909	Contimet Pd 02/35 D	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.30	0.30	0.015 (150)	0.03 (300)	0.10
910	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
911	ASTM B265, Grade 7	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
912	TITECH 0.2Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	—	—	0.18	0.015 (150)	0.03 (300)	0.10
913	ASTM B338, Grade 11	—	—	—	—	—	—	—	—	—	0.15	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
914	OMC-103 PLAT Pd 02/03	—	—	—	—	—	—	—	—	—	0.15-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
915	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.20	—	—	0.20	0.20	0.015 (150)	0.05 (500)	0.08
916	UT35-02	—	—	—	—	—	—	—	—	—	0.15-0.30	—	Total 0.30	0.18	0.12	0.010 (100)	0.05 (500)	0.07
917	4200	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
918	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.15 min	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
919	BS CP 3003 Part 9, TP 1	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.05	0.20	0.0125 (125)	0.06 (600)	0.05
920	Contimet Pd 02/35D	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
921	Avesta Alti 24 Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
922	Contimet Pd 02/35	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
923	Contimet Pd 02/30	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
924	ALLVAC 40-Pd	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.20	0.18	0.010 (100)	0.03 (300)	0.10
925	ASTM B367, Grade C-7A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10
926	ASTM B367, Grade C-7B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
927	ASTM B367, Grade C-8A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.50	0.40	0.010 (100)	0.05 (500)	0.10
928	ASTM B367, Grade C-8B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
929	ASTM B367, Grade C-8A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10
930	ASTM B367, Grade C-7B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.20	0.18	0.010 (100)	0.03 (300)	0.10
931	ASTM B367, Grade C-7A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.50	0.40	0.010 (100)	0.05 (500)	0.10
932	ASTM B367, Grade C-8E	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
933	OMC-PD	—	—	—	—	—	—	—	—	—	0.20	—	—	0.05	0.10	0.012 (120)	0.03 (300)	0.05
934	Avesta ATi Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
935	OMC-103 (Cast)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.30	0.25	0.013 (130)	0.06 (600)	0.10
936	Tikutan RT 18(Pd)	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.35	0.015 (150)	—	0.10
937	Carlson C-55/Pd	—	—	—	—	—	—	—	—	—	0.12	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
938	TiL 120 Grade 8	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
939	Tikutan RT 15(Pd)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
940	Tikutan RT 12(Pd)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
887	ASTM B337, Grade 11	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless and welded pipe	Standard for seamless and welded pipe of this composition.
888	ASTM B265, Grade 11	(Pd alloy)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition.
889	ASTM B337, Grade 11	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless and welded pipe	Standard for seamless and welded pipe of this composition.
890	ASTM B265, Grade 11	(Pd alloy)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition.
891	L-7021, Ti-99.3 Pd	(Pd alloy)	—	SP	—	Alpha	—	Corrosion resistant
892	RMI 02Pd	(Pd alloy)	C-0003	US	ASTM B265	Alpha	All forms	Chemical industry equipment, special corrosion applications
893	ASTM B265, Grade 7	(Pd alloy)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition.
894	ASTM B338, Grade 11	(Pd alloy)	—	US	ASTM B338	Alpha	ST & WT, Hexch, con	Standard for seamless and welded tube for heat exchangers and condensers
895	Ti-0.20Pd	(Pd alloy)	—	US	ASTM B338	Alpha	SH-ST P, BA, BI, W, T, E	Chemical industry equipment, special corrosion resistant applications
896	TTC 22B Casting	(Pd alloy)	C-0001	US	ASTM B367-C	Alpha	C	Castings with improved corrosion resistance, commercial market
897	ASTM B348, Grade 11	(Pd alloy)	—	US	ASTM B348	Alpha	BA, BI	Standard for bars and billets of this composition.
898	ASTM B338, Grade 7	(Pd alloy)	—	US	ASTM B338	Alpha	ST & WT, Hexch, con	Standard for seamless and welded tubing for heat exchangers and condensers
899	HA-1940Pd*	(Pd alloy)	C-0011	US	—	Alpha	SH-ST P, BA, BI, W, T, E	Special corrosion applications, Chemical industry
900	HA-Ti-0.15Pd*	(Pd alloy)	C-0012	US	—	Alpha	SH-ST P, BA, BI, W, T, E	Special corrosion applications, Chemical industry
901	ASTM B348, Grade 7	(Pd alloy)	—	US	ASTM B348	Alpha	BA, BI	Standard for bars and billets of this composition
902	ASTM B337, Grade 7	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless & welded pipe	Standard for seamless and welded pipe of this composition
903	ASTM B338, Grade 7	(Pd alloy)	—	US	ASTM B338	Alpha	ST & WT, Hexch, con	Standard for seamless and welded tubing for heat exchangers and condensers
904	MMA-1942	(Pd alloy)	C-0002	US	—	Alpha	All forms	Chemical corrosion resistant, good in reducing media
905	ASTM B337, Grade 7	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless & welded pipe	Standard for seamless and welded pipe of this composition
906	Crucible Ti-0.15Pd	(Pd alloy)	—	US	—	Alpha	SH-ST P, BA, BI, W, T, E	Chemical industry equipment, special corrosion resistant applications
907	Contimet Pd 02/30	(Pd alloy)	C-0004	US	—	Alpha	BA, SH-ST P, W, F, G, E, T	For increased corrosion resistance in reducing conditions
908	Contimet Pd 02/35	(Pd alloy)	C-0046	GY	—	Alpha	Code weld tube only	For increased corrosion resistance in reducing conditions
909	Contimet Pd 02/35D	(Pd alloy)	C-0046	GY	—	Alpha	BA, SH-ST P, W, F, G, E, T	For increased corrosion resistance in reducing conditions
910	ASTM B381, Grade F-7	(Pd alloy)	US	—	ASTM B381	Alpha	FG	Standard for forgings of this composition
911	ASTM B265, Grade 7	(Pd alloy)	—	US	ASTM B265	Alpha	SH-ST P	Standard for strip, sheet, and plate of this composition
912	TITECH 0.2Pd	(Pd alloy)	C-0006	US	ASTM B348	Alpha	All forms	Chemical industry for oxidizing and reducing media
913	ASTM B338, Grade 11	(Pd alloy)	—	US	ASTM B338	Alpha	ST & WT, Hexch, con	Standard for seamless and welded tubing for heat exchangers and condensers
914	DYNAPLAT Pd 02/03	(Pd alloy)	C-0050	US	—	Alpha	Explosion-bond clad	Cladding with explosion-bonded technique
915	ASTM B381, Grade F-7	(Pd alloy)	—	GY	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
916	UT35-02	(Pd alloy)	C-0020	FR	—	Alpha	BA, SH P, W, F, G	Corrosion resistant in acids and reducing media
917	4200	(Pd alloy)	—	UR	—	Alpha	—	Corrosion resistant
918	ASTM B381, Grade F-7	(Pd alloy)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
919	BS CP 3003 Part 9, TP 1	(Pd alloy)	—	UK	CP 3003 P 9	Alpha	All forms	Tank linings in chemical industry, Palladium gives increased protection
920	Contimet Pd 02/35D	(Pd alloy)	—	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance, Tubes
921	Avesta AT, 24 Pd	(Pd alloy)	C-0046	SW	—	Alpha	All forms	Chemical industry uses
922	Contimet Pd 02/35	(Pd alloy)	C-0021	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance
923	Contimet Pd 02/35	(Pd alloy)	C-0046	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance
924	ALLVAC 40-Pd	(Pd alloy)	C-0008	US	—	Alpha	All forms	Corrosion resistant material for chemical industry
925	ASTM B367, Grade C-7A	(Pd alloy)	—	US	ASTM B348	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
926	ASTM B367, Grade C-7B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
927	ASTM B367, Grade C-8A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
928	ASTM B367, Grade C-8B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
929	ASTM B367, Grade C-8A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
930	ASTM B367, Grade C-7B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
931	ASTM B367, Grade C-7A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
932	ASTM B367, Grade C-8B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
933	OMC-PD	(Pd alloy)	C-0009	US	—	Alpha	All forms	For chemical processing equipment, oxidation or reduction media
934	Avesta AT, Pd	(Pd alloy)	C-0021	SW	—	Alpha	All forms	For use with dilute acids
935	OMC-103 (Cast)	(Pd alloy)	C-0009	US	—	Alpha	C	For chemical processing equipment, oxidation or reduction media
936	Tikulan RT 18 (Pd)	(Pd alloy)	C-0019	GY	DIN 3 7055	Alpha	PFG	Improved resistance to corrosion, especially reducing
937	Carlson C-55/Pd	(Pd alloy)	C-0053	US	ASTM B265-3	Alpha	—	Plate product applications
938	TiL 120 Grade 8	(Pd alloy)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed casting
939	Tikulan RT 15 (Pd)	(Pd alloy)	C-0019	GY	DIN 3 7035	Alpha	All forms	Improved resistance to corrosion, especially in a reducing medium
940	Tikulan RT 12 (Pd)	(Pd alloy)	C-0019	GY	DIN 3 7025	Alpha	All forms	Improved resistance to corrosion, especially in a reducing medium

*Noncurrent standard or alloy designation

FA—bars, BA—billet, C—casting, E—extrusion, F—foil, FG—forging, L—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, W T—welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT ≤ (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.-% (ppm)	Nitrogen Wt.-% (ppm)	Carbon
Ti-Pd 0.15-0.25 (cont.)																		
941	Carlson C-40/Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	—	0.10
942	Carlson C-30/Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.015 (150)	—	0.10
943	Fuchs TP 02	—	—	—	—	—	—	—	—	—	0.20	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
944	IMI-260	—	—	—	—	—	—	—	—	—	0.015	—	—	—	—	—	—	—
945	IMI-261	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.25	—	—	—	—
946	DIN 3.7040 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.35	0.20	0.013 (130)	0.06 (600)	0.08
947	DIN 3.7070 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.30	0.30	0.013 (130)	0.07 (700)	0.10
948	DIN 2.7056 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.20	0.25	0.013 (130)	0.06 (600)	0.10
949	DIN 3.7030 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.20	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
950	Ti-0.15Pd	—	—	—	—	—	—	—	—	—	0.15-0.20	—	—	0.20	—	0.015 (150)	0.05 (500)	0.08
Ti-Pt 1																		
951	Ti-P7	—	—	—	—	—	—	—	—	—	—	Pt 1.0	—	—	—	—	—	—
Ti-Si 8																		
952	Ventron 88399, 92.8	—	—	—	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—
Ti-Ta 5																		
953	4204	—	—	—	—	—	—	—	—	—	—	Ta 5.0	—	0.09	0.014 (140)	0.004 (40)	—	—
Ti-V 1-Mo 1-Mn 2.5-Cr 1-Fe 1.5																		
954	48-T6*	—	0.7-1.1	0.7-1.1	—	—	2.0-3.0	0.7-1.1	—	—	—	—	—	1.2-1.7	—	—	—	—
Ti-V 1-Mo 1-Mn 3-Cr 1-Fe 1																		
955	Eltant AB 105*	—	1.0	1.0	—	—	3.0	1.0	—	—	—	—	—	1.0	0.50	0.015 (150)	0.10	0.10
Ti-V 1.5-Mo 1.5-Zr 2.5-Cb/Nb 1.5																		
956	AT2-1	—	1.5	1.5	—	20-30	—	—	—	—	1.5	—	—	—	—	—	—	—
Ti-V 2-Zr 2																		
957	AT2-3	—	1.95	—	—	1.95	—	—	—	0.12	—	—	—	0.085	0.12	0.011 (110)	0.04	—
Ti-V 10																		
958	Ti-V	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Zr 0-(V,Mo,Cb/Nb) 0																		
959	AT2-4	—	V	MO	—	Zr	—	—	—	—	—	Cb/Nb	—	—	—	—	—	—
Ti-Al 6-Zr 5-W 1-Si 0.2																		
960	UT684	6.0	—	—	—	5.0	—	—	—	0.3	—	W 1.0	—	—	—	—	—	—
Ti-Al 4-Mo 4-Sn 4-Si 0.5																		
961	BS TA 42	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05	0.05-0.20
962	BS TA 39	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
963	BS TA 38	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
964	BS TA 40	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
965	BS TA 41	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
Ti-Al 6-V 4																		
966	Titanium 6Al-4V	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08
967 MST Alloys* (see RMI list)																		
Ti-Al 6-V 4 ELI																		
968	Titanium 6Al-4V ELI	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.13	0.015 (150)	0.05 (500)	0.08
Ti-Unalloyed-99.5, CP, -40 ksi																		
969	CSN 42 4655	—	—	—	—	—	—	—	—	0.15	—	Total 0.50	0.03	0.15	0.020 (200)	0.05 (500)	0.10	
970	ON 42 4656	—	—	—	—	—	—	—	—	0.15	—	Total 0.50	0.03	0.15	0.020 (200)	0.05 (500)	0.10	
971	JK 183 122	—	—	—	—	—	—	—	—	—	—	Total 0.50	0.50	0.40	0.0125 (125)	0.05 (500)	0.08	
972	MIL-T-9047E, Comp 1	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.08	
973	MIL-T-00904/F, Comp 1	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.08	
974	MIL-F-83142A, Comp 1	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.20	0.015 (150)	0.05 (500)	0.08	
975	MIL-T-81556, Type 1, Comp A	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.20	0.015 (150)	0.05 (500)	0.08	
976	MIL-T-81915, Type 1, Comp A	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.20	0.015 (150)	0.05 (500)	0.08	
Ti-Unalloyed-99.2, CP, -55 ksi																		
977	MIL-T-81556, Type 1, Comp C	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.30	0.30	0.015 (150)	0.05 (500)	0.08	

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Pd 0.15-0.20 (cont.)								
941	Carlson C-40/Pd	(Pd alloy)	C-0053	US	ASTM B265-7	Alpha	PFG	Plate product applications
942	Carlson C-30/Pd	(Pd alloy)	C-0053	US	ASTM B265-11	Alpha	PFG	Plate product applications
943	Fuchs TP 02	(Pd alloy)	C-0054	GY	—	Alpha	FG	Excellent corrosion resistance to HCl and reducing media
944	IMI-260	(Pd alloy)	C-0013	UK	BS 27A 1	Alpha	—	Increased corrosion resistant applications
945	IMI-261	(Pd alloy)	—	UK	—	Alpha	—	Increased corrosion resistant applications
946	DIN 3 7040 (proposed)	(Pd alloy)	—	GY	DIN 3 7040	Alpha	All forms	Corrosion resistant
947	DIN 3 7070 (proposed)	(Pd alloy)	—	GY	DIN 3 7070	Alpha	All forms	Corrosion resistant
948	DIN 2 7056 (proposed)	(Pd alloy)	—	GY	DIN 3 7056	Alpha	All forms	Corrosion resistant
949	DIN 3 7030 (proposed)	(Pd alloy)	—	GY	DIN 3 7030	Alpha	All forms	Corrosion resistant
950	Ti-0.15Pd	(Pd alloy)	C-0001	US	—	Alpha	SH, ST, P, BI, BA, W, T, E	Chemical industry equipment, special corrosion resistant applications
Ti-Pt 1								
951	Ti-P7	—	C-0057	US	—	Alpha	Powder-325 mesh	Scientific applications
Ti-Si 8								
952	Ventron 88399 92 8	—	—	US	—	Alpha	—	For scientific applications
Ti-Ta 5								
953	4202	—	—	UR	—	Alpha	—	—
Ti-V 1-Mo 1-Mn 2.5-Cr 1-Fe 1.5								
954	48-76	—	—	UR	—	Alpha + beta	—	Early titanium alloy
Ti-V 1-Mo 1-Mn 3-Cr 1-Fe 1								
955	Elanor AB 105	—	C-0046	GY	—	Alpha	—	—
Ti-V 1.5-Mo 1.5-Zr 2.5-Cb/Nb 1.5								
956	AT2-1	—	—	UR	—	Alpha	SH	—
Ti-V 2-Zr 2								
957	AT2-3	—	—	UR	—	—	—	—
Ti-V 10								
958	Ti-V	—	C-0057	US	—	—	Powder-100 mesh	For scientific applications
Ti-Zr 0-10-Mo-Cb/Nb 10								
959	AT2-4	—	—	UR	—	Alpha	SH	—
Ti								
960	UT684	—	C-0020	FR	—	Alpha	—	Used in the Adour jet engine of Jaguar Strike Aircraft
Ti-Al 4-Mo 4-Sn 4-Si 0.5								
961	BS TA 42	(IMI-551)	—	UK	BS TA 42	Alpha + beta...	FG	Forgings
962	BS TA 39	(IMI-551)	—	UK	BS TA 39	Alpha + beta...	FG stock	Forgings forging stock
963	BS TA 38	(IMI-551)	—	UK	BS TA 38	Alpha + beta...	BA for machining	—
964	BS TA 40	(IMI-551)	—	UK	BS TA 40	Alpha + beta...	—	—
965	BS TA 41	(IMI-551)	—	UK	BS TA 41	Alpha + beta...	FG stock	Forgings forging stock
Ti-Al 6-V 4								
966	Titanium 6Al-4V	—	C-0051	US	AMS 4928B	—	—	—
967	MST Alloys* (see RMI list)	—	C-0003	US	—	—	—	—
Ti-Al 6-V 4 ELI								
968	Titanium 6Al-4V ELI	—	C-0051	US	AMS 4928B	—	—	—
Ti-Unalloyed-99.5 CP -40 ksi YS								
969	CSN 42 4655	(CP)	—	CZ	CSN 42 4655	Alpha	All forms	Airframes, chemical equipment and marine applications
970	ON 42 4656	(CP)	—	CZ	ON 42 4656	Alpha	All forms	Airframes, chemical equipment and marine applications
971	JK 183 122	(CP)	—	CZ	JK 183 122	Alpha	All forms	Airframes, chemical equipment and marine applications
972	MIL-T-9047E Comp 1	(CP)	—	US	MIL-T-9047E	Alpha	All forms	Airframes, chemical equipment and marine applications
973	MIL-T-83142A Comp 1	(CP)	—	US	MIL-T-83142A	Alpha	All forms	Airframes, chemical equipment and marine applications
974	MIL-T-81556 Type I, Comp A	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframes, chemical equipment and marine applications
975	MIL-T-81556 Type I, Comp A	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframes, chemical equipment and marine applications
976	MIL-T-81915 Type I, Comp A	(CP)	—	US	MIL-T-81915	Alpha	All forms	Airframes, chemical equipment and marine applications
Ti-Unalloyed-99.2 CP -55 ksi YS								
977	MIL-T-81556 Type I, Comp C	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframes, chemical equipment and marine applications

*Noncurrent standard or alloy designation

**Current standard or alloy designation, not to be used on new designs

...These alloys also known as alpha-dispersoid types

BA—bars BI—billet C—casting E—extrusion F—foil FG—forging I—ingot P—plate, RO—rod SH—sheet

ST—strip T—tubing W—wire con—condensers H—exch—heat exchanger, ST—seamless tubing W T—

welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																								
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS												
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Ch/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon						
Ti-Unalloyed—99.95 CP, -70 to 15																								
978	MIL-T-81556, Type I, Comp. D	No specific analysis given, Minimum 94 percent Ti																						
979	MIL-T-13405C, Ti Powder																							
Ti—Al 2.15-5 Sn 1-Zr 5-Mo 1-Si 0.2																								
980	MIL-T-9047E, Comp. 10	20-25	—	0.8-12	10.5-11.5	4.0-6.0	—	—	—	—	—	—	—	—	—	—	—	—						
981	MIL-T-09047F, Comp. 10	20-25	—	0.8-12	10.5-11.5	4.0-6.0	—	—	0.15-0.27	—	—	—	—	—	—	—	—	—						
982	MIL-F-83142A, Comp. 10	20-25	—	0.8-12	10.5-11.5	4.0-6.0	—	—	0.15-0.27	—	—	—	—	—	—	—	—	—						
Ti—Al 3-F 13-4r 11																								
983	MIL-T-9047E, Comp. 12	25-35	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	—	—	—						
984	MIL-T-09047F, Comp. 12	25-35	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	—	—	—						
985	MIL-F-83142A, Comp. 12	25-35	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	—	—	—						
986	MIL-R-81588, Type IV, Comp. A	25-35	12.5-14.3	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	—	—	—						
Ti—Al 5-Sn 2.5																								
987	MIL-T-9047E, Comp. 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
988	MIL-T-09047F, Comp. 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
989	MIL-F-83142A, Comp. 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
990	MIL-T-81556, Type I, Comp. A	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
991	MIL-R-81588, Type II, Comp. A	4.5-7.5	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ti—Al 5-Sn 2.5 ELI																								
992	MIL-T-9047E, Comp. 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	—	—	—	—	—	—	—	—	—	—						
993	MIL-T-09047F, Comp. 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	—	—	—	—	—	—	—	—	—	—						
994	MIL-F-83142A, Comp. 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	—	—	—	—	—	—	—	—	—	—						
995	MIL-T-81915, Type II, Comp. A	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
996	MIL-T-81556, Type II, Comp. B	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
997	MIL-R-81588, Type II, Comp. B	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ti—Al 5-Sn 5-Zr 5																								
998	MIL-F-83142A, Comp. 4*	5.0	—	—	5.0	5.0	—	—	—	—	—	—	—	—	—	—	—	—						
Note: This alloy not being used at present																								
Ti—Al 6-V 4																								
999	MIL-T-46077B	5.50-6.50	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1000	MIL-T-9047E, Comp. 6	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1001	MIL-T-09047F, Comp. 6	5.50-6.75	3.5-4.5	0.10 max	0.10 max	0.10 max	—	0.10 max	—	—	—	—	—	—	—	—	—	—						
1002	MIL-F-83142A, Comp. 6	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1003	MIL-T-81556, Type III, Comp. A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1004	MIL-T-81915, Type III, Comp. A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1005	MIL-R-81588, Type III, Comp. A	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ti—Al 6-V 4 ELI																								
1006	MIL-T-9047E, Comp. 7	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1007	MIL-T-09047F, Comp. 7	5.50-6.75	3.5-4.5	0.10 max	0.10 max	0.10 max	—	0.10 max	—	—	—	—	—	—	—	—	—	—						
1008	MIL-F-83142A, Comp. 7	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1009	MIL-T-81556, Type III, Comp. B	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
1010	MIL-R-81588, Type III, Comp. B	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ti—Al 6-V 6-Sn 2																								
1011	MIL-T-9047E, Comp. 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	0.35-1.00	—	—	—	—	—	—	—	—	—	—						
1012	MIL-T-09047F, Comp. 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	0.35-1.00	—	—	—	—	—	—	—	—	—	—						
1013	MIL-F-83142A, Comp. 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	0.35-1.00	—	—	—	—	—	—	—	—	—	—						
1014	MIL-T-81556, Type III, Comp. C	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	0.35-1.00	—	—	—	—	—	—	—	—	—	—						
Ti—Al 6-Mo 0.8-Cb/Al 2-Ta 1																								
1015	MIL-R-81588, Type II, Comp. D	5.5-6.5	—	0.50-1.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ti—Al 6-Mo 2-Sn 2-Zr 4																								
1016	MIL-T-9047E, Comp. 11	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	—	—	—	—	—						
1017	MIL-T-09047F, Comp. 11	5.5-6.5	—	1.8-2.2	1.75-2.25	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—						
1018	MIL-F-83142A, Comp. 11	5.5-6.5	—	1.8-2.2	1.75-2.25	3.6-4.4	—	—	—	—	—	—	—	—	—	—	—	—						
1019	MIL-T-81915, Type III, Comp. B	5.5-6.5	—	1.5-2.5	1.5-2.5	3.6-4.4	—	—	—	—	—	—	—	—	—	—	—	—						

Information on this group of alloys is continued on page below

Noncurrent standard or alloy designation

Index No	Alloy Designation	Common Name/Alloy	Company Code	City Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-6Al-4V								
978	MIL-T-81556, Type I, Comp. D	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframe, chemical equipment, and airframe applications
979	MIL-T-13405C, Type I, Powder	(CP)	—	US	MIL-T-13405C	Alpha	Powder	Pyrotechnics
Ti-6Al-2Sn-1Zr-5Mo-1.5Si-0.2C								
980	MIL-T-9047E, Comp. 10	(6-7)	—	US	MIL-T-9047E	Near-alpha	IBI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
981	MIL-T-009047F, Comp. 10	(6-7)	—	US	MIL-T-009047F	Near-alpha	IBI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
982	MIL-F-83142A, Comp. 10	(6-7)	—	US	MIL-F-83142A	Near-alpha	IBI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
Ti-6Al-3-13-5Cr-11								
983	MIL-T-9047E, Comp. 12	(13-11-3)	—	US	MIL-T-9047E	Beta	IBI BA W P SH ST F T	Aircraft parts and fasteners, Very high strength at room and mod temp
984	MIL-T-009047F, Comp. 12	(13-11-3)	—	US	MIL-T-009047F	Beta	IBI BA W SH ST F T	Aircraft parts and fasteners, Very high strength at room and mod temp
985	MIL-F-83142A, Comp. 12	(13-11-3)	—	US	MIL-F-83142A	Beta	IBI BA W SH ST F T	Aircraft parts and fasteners, Very high strength at room and mod temp
986	MIL-R-81588, Type IV, Comp. A	(13-11-3)	—	US	MIL-R-81588	Beta	IBI BA W SH ST F T	Aircraft parts and fasteners, Very high strength at room and mod temp
Ti-6Al-5Sn-2.5								
987	MIL-T-9047E, Comp. 2	(A-110)	—	US	MIL-T-9047E	Alpha	IBI BA P SH E C	Good weldability and oxidation resistance
988	MIL-T-009047F, Comp. 2	(A-110)	—	US	MIL-T-009047F	Alpha	IBI BA P SH E C	Stability and strength at elevated temperatures
989	MIL-F-83142A, Comp. 2	(A-110)	—	US	MIL-F-83142A	Alpha	IBI BA P SH E C	Good weldability and oxidation resistance
990	MIL-T-81556, Type II, Comp. A	(A-110)	—	US	MIL-T-81556	Alpha	IBI BA P SH E C	Good weldability and strength
991	MIL-R-81588, Type II, Comp. A	(A-110)	—	US	MIL-R-81588	Alpha	IBI BA P SH E C	Good weldability and strength
Ti-6Al-5Sn-2.5 ELI								
992	MIL-T-9047E, Comp. 3	(A-110) ELI	—	US	MIL-T-9047E	Alpha	IBI BA P SH E C	High pressure cryogenic vessels, below 320 F (-196 C)
993	MIL-T-009047F, Comp. 3	(A-110) ELI	—	US	MIL-T-009047F	Alpha	IBI BA P SH E C	High pressure cryogenic vessels, below 320 F (-196 C)
994	MIL-F-83142A, Comp. 3	(A-110) ELI	—	US	MIL-F-83142A	Alpha	IBI BA P SH E C	High pressure cryogenic vessels, below 320 F (-196 C)
995	MIL-T-81915, Type II, Comp. A	(A-110) ELI	—	US	MIL-T-81915	Alpha	Castings	High pressure cryogenic vessels, below 320 F (-196 C)
996	MIL-T-81556, Type II, Comp. A	(A-110) ELI	—	US	MIL-T-81556	Alpha	IBI BA P SH E C	High pressure cryogenic vessels, below 320 F (-196 C)
997	MIL-R-81588, Type II, Comp. A	(A-110) ELI	—	US	MIL-R-81588	Alpha	IBI BA P SH E C	High pressure cryogenic vessels, below 320 F (-196 C)
Ti-6Al-5Sn-5Zr-5								
998	MIL-F-83142A, Comp. 4	—	—	US	MIL-F-83142A	Alpha	Forgings	This alloy not being used at present
Ti-6Al-6V-4								
999	MIL-T-46077B	(6-4)	—	US	MIL-T-46077B	Alpha - beta	All forms	Armor plate
1000	MIL-T-5048E, Comp. 6	(6-4)	—	US	MIL-T-5048E	Alpha - beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1001	MIL-T-009047F, Comp. 6	(6-4)	—	US	MIL-T-009047F	Alpha - beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1002	MIL-F-83142A, Comp. 6	(6-4)	—	US	MIL-F-83142A	Alpha - beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1003	MIL-T-81556, Type III, Comp. A	(6-4)	—	US	MIL-T-81556	Alpha - beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1004	MIL-T-81915, Type III, Comp. A	(6-4)	—	US	MIL-T-81915	Alpha - beta	Castings	Compressor blades and discs, pressure vessels, rocket cases
1005	MIL-R-81588, Type III, Comp. A	(6-4)	—	US	MIL-R-81588	Alpha - beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
Ti-6Al-6V-4 ELI								
1006	MIL-T-9047E, Comp. 7	(6-4) ELI	—	US	MIL-T-9047E	Alpha - beta	All forms	High fracture toughness with special heat treatment
1007	MIL-T-009047F, Comp. 7	(6-4) ELI	—	US	MIL-T-009047F	Alpha - beta	All forms	For high pressure cryogenic vessels, below 320 F (-196 C)
1008	MIL-F-83142A, Comp. 7	(6-4) ELI	—	US	MIL-F-83142A	Alpha - beta	All forms	For high pressure cryogenic vessels, below 320 F (-196 C)
1009	MIL-T-81556, Type III, Comp. B	(6-4) ELI	—	US	MIL-T-81556	Alpha - beta	All forms	For high pressure cryogenic vessels, below 320 F (-196 C)
1010	MIL-R-81588, Type III, Comp. B	(6-4) ELI	—	US	MIL-R-81588	Alpha - beta	All forms	For high pressure cryogenic vessels, below 320 F (-196 C)
Ti-6Al-6V-5Sn-2								
1011	MIL-T-9047E, Comp. 8	(6-6-2)	—	US	MIL-T-9047E	Alpha - beta	IBI BA P SH E	Rocket engine cases, airframe components, ordnance components
1012	MIL-T-009047F, Comp. 8	(6-6-2)	—	US	MIL-T-009047F	Alpha - beta	IBI BA P SH E	Rocket engine cases, airframe components, ordnance components
1013	MIL-F-83142A, Comp. 8	(6-6-2)	—	US	MIL-F-83142A	Alpha - beta	IBI BA P SH E	Rocket engine cases, airframe components, ordnance components
1014	MIL-T-81556, Type III, Comp. C	(6-6-2)	—	US	MIL-T-81556	Alpha - beta	IBI BA P SH E	Rocket engine cases, airframe components, ordnance components
Ti-6Al-6Mo-0.8Cu-Nb-2Ta-1								
1015	MIL-R-81588, Type II, Comp. D	(6-2-1-1)	—	US	MIL-R-81588	Near-alpha	IBI BA P	High tough, mod strength, weldability, and resist seawater corr., deep diving vessel
Ti-6Al-6Mo-2.5Sn-2Zr-4								
1016	MIL-T-9047E, Comp. 11	(6-6-2)	—	US	MIL-T-9047E	Alpha - beta	IBI BA P SH E	For use where high creep strength is needed, jet engine components
1017	MIL-T-009047F, Comp. 11	(6-6-2)	—	US	MIL-T-009047F	Alpha - beta	IBI BA P SH E	For use where high creep strength is needed, jet engine components
1018	MIL-F-83142A, Comp. 11	(6-6-2)	—	US	MIL-F-83142A	Alpha - beta	Castings	Rocket engine cases, airframe components, ordnance components
1019	MIL-T-81915, Type III, Comp. B	(6-6-2)	—	US	MIL-T-81915	Alpha - beta	IBI BA P SH E	For use where high creep strength is needed, jet engine components

*Noncurrent standard or alloy designation

BA - bars, BL - billet, C - casting, E - extrusion, F - foil, FG - forging, I - ingot, P - plate, RD - rod, SH - sheet, ST - strip, T - tubing, W - wire, con - condensers, Mech - heat exchanger, S - seamless, tubing - welded tubing

TABLE 1. (Continued)

CHEMICAL COMPOSITION, WEIGHT PERCENT. \leq (BALANCE TITANIUM)																		
Index No.	Alloy Designation	ALLOYING ELEMENTS										INTERSTITIAL ELEMENTS						
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
I—Al 6-Mo 6-Sn 2-Zr 4-Si 0.2																		
1020	MIL-T-9047E Comp. 14	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
1021	MIL-T-90947F Comp. 14	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
I—Al 7-Mo 4																		
1022	MIL-T-9047E Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1023	MIL-T-90947F Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1024	MIL-F-83142A Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1025	MIL-T-81556 Type III Comp. D	6.5-7.5	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.20	0.015 (150)	0.05 (500)	0.10
I—Al 8-1-Mo 1																		
1026	MIL-T-9047E Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1027	MIL-T-90947F Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1028	MIL-F-83142A Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1029	MIL-T-81556 Type II Comp. C	7.3-8.3	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
1030	MIL-R-81586 Type II Comp. C	7.3-8.3	0.75-1.25	0.75-1.25	—	—	—	—	—	—	0.75-1.25	—	Total 0.30	0.25	0.12	0.008 (80)	0.03 (300)	0.05
I—Mo 11.5-Sn 4.5-Zr 6																		
1031	MIL-T-9047E Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
1032	MIL-T-90947F Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
1033	MIL-F-83142A Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
Ti-Alloys (For Critical Applications)																		
1034	MIL-T-46035B ELI	Composition dependent on alloy involved																
1035	MIL-T-46035B LI	Composition dependent on alloy involved																
1036	MIL-T-46035B NI	Composition dependent on alloy involved																
1037	MIL-T-46035A ELI	Composition dependent on alloy involved																
1038	MIL-T-46035A LI	Composition dependent on alloy involved																
1039	MIL-T-46035A NI	Composition dependent on alloy involved																

Information on this group of alloys is continued on page below.

ELI—extra low interstitials; LI—low impurities; NI—normal impurities.

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Al 8-Mo 8-3a 2-Zr 4-Si 0.2								
1020	MIL-T-9047E, Comp. 14	(6-2-4-6)	—	US	MIL-T-9047E	Alpha + beta	IBI,BA,P,SH	Jet engine components requiring high tensile and intermediate creep strength
1021	MIL-T-009047F, Comp. 14	(6-2-4-6)	—	US	MIL-T-009047F	Alpha + beta	IBI,BA,P,SH	Jet engine components requiring high tensile and intermediate creep strength
Ti-Al 7-Mo 4								
1022	MIL-T-9047E, Comp. 9	(7-4)	—	US	MIL-T-9047E	Alpha + beta	IBI,BA,P	Aircraft and jet engine parts
1023	MIL-T-009047F, Comp. 9	(7-4)	—	US	MIL-T-009047F	Alpha + beta	IBI,BA,P	Aircraft and jet engine parts
1024	MIL-F-83142A, Comp. 9	(7-4)	—	US	MIL-F-83142A	Alpha + beta	IBI,BA,P	Aircraft and jet engine parts
1025	MIL-T-81556, Type III, Comp. D	(7-4)	—	US	MIL-T-81556	Alpha + beta	IBI,BA,P	Aircraft and jet engine parts
Ti-Al 8-9 1-Mo 1								
1026	MIL-T-9047E, Comp. 5	(8-1-1)	—	US	MIL-T-9047E	Near-alpha	IBI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1027	MIL-T-009047F, Comp. 5	(8-1-1)	—	US	MIL-T-009047F	Near-alpha	IBI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1028	MIL-F-83142A, Comp. 5	(8-1-1)	—	US	MIL-F-83142A	Near-alpha	IBI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1029	MIL-T-81556, Type II, Comp. C	(8-1-1)	—	US	MIL-T-81556	Near-alpha	IBI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1030	MIL-R-81558, Type II, Comp. C	(8-1-1)	—	US	MIL-R-81558	Near-alpha	IBI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
Ti-Mo 11.5-Sa 4.5-Zr 6								
1031	MIL-T-9047E, Comp. 13	(Beta III)	—	US	MIL-T-9047E	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
1032	MIL-T-009047F, Comp. 13	(Beta III)	—	US	MIL-T-009047F	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
1033	MIL-F-83142A, Comp. 13	(Beta III)	—	US	MIL-F-83142A	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
Ti-Alloys (For Critical Applications)								
1034	MIL-T-46035B, ELI	—	—	US	MIL-T-46035B	Depends on alloy	—	High strength critical applications
1035	MIL-T-46035B, LI	—	—	US	MIL-T-46035B	Depends on alloy	—	High strength critical applications
1036	MIL-T-46035B, NI	—	—	US	MIL-T-46035B	Depends on alloy	BA,BI,Rods	High strength critical applications
1037	MIL-T-46038, ELI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications
1038	MIL-T-46038A, LI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications
1039	MIL-T-46038A, NI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications

9A—bars, BI—billet, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, ST—seamless tubing, WT—welded tubing

TABLE 1A. COMPARISON OF NOMINAL CHEMICAL COMPOSITIONS (CONVENTIONAL FORMAT) PLUS THE COMMON NAMES/ALLOYS WITH NOMINAL CHEMICAL COMPOSITIONS (COMPUTERIZED FORMAT) [ALPHANUMERICAL BY COMPUTERIZED FORMAT]

Nominal Composition Wt % (Conventional Format)	Some Common Names/Alloys	Country Code	Nominal Composition Wt % (Computerized Format)
Unalloyed Ti, 99.0-70 ksi YS	(CP), (Grade 4)	US, UK, FR, GY, UR	Ti-Unalloyed 99.0, CP, 70 ksi YS
Unalloyed Ti, 99.2-55 ksi YS	(CP), (Grade 3)	US, UK, FR, GY	Ti-Unalloyed 99.2, CP, 55 ksi YS
Unalloyed Ti, 99.5-40 ksi YS	(CP), (Grade 2)	US, UK, FR, GY	Ti-Unalloyed 99.5, CP, 40 ksi YS
Unalloyed Ti, 99.6-25 ksi YS	(CP), (Grade 1)	US, UK, FR, GY	Ti-Unalloyed 99.6, CP, 25 ksi YS
Ti-0.8Al-0.8Mn	(OT4-0)	UR	Ti-Al0.8-Mn0.8
Ti-1Al-1.5Mn	(OT4-0)	UR	Ti-Al1-Mn1.5
Ti-1Al-8V-5Fe	(185)	US	Ti-Al1-V8-Fe5
Ti-2Al-1.5Mn	(OT4-1)	UR	Ti-Al2-Mn1.5
Ti-2Al-2Mn	(IMI 315), T A2M	UK, FR	Ti-Al2-Mn2
Ti-2Al-11V-2Sn-11Zr	(Transage 129)	US	Ti-Al2-V 11 Sn2 Zr 11
Ti-2.5Al-11Sn-5Zr-1Mo-0.25Si	(679), (IMI 679)	US, UK	Ti-Al2.5-Sn 11 Zr5 Mo1 Si0.2
Ti-2.25Al-11Sn-4Mo-0.25Si	(IMI 680), TE11DA	UK, FR	Ti-Al2.25-Sn 11-Mo4 Si0.25
Ti-2.5Al-8Mo-4.5Cr	Development	US	Ti-Al2.5-Mo8-Cr4.5
Ti-2.5Al-10Mo-6Cr	Development	US	Ti-Al2.5-Mo10-Cr6
Ti-2.5Al-5Mo-4.5V	(VT16)	UR	Ti-Al2.5-Mo5-V4.5
Ti-2.5Al-8V-10Mo	Development	US	Ti-Al2.5-V8-Mo10
Ti-3Al-5Cr-3Fe	(IMP 6.2)	UR	Ti-Al3-Cr5-Fe3
Ti-3Al-7Mo-5.5Cr-3Fe	(IVT 1)	UR	Ti-Al3-Mo7-Cr5.5-Fe3
Ti-3Al-7.5Mo-11Cr	(VT15)	UR	Ti-Al3-Mo7.5-Cr 11
Ti-3Al-1V-3Mo	(T A4D3V)	FR	Ti-Al3-V1-Mo3
Ti-3Al-V2	(IMP 7)	UR	Ti-Al3-V2
Ti-3Al-2.5V	(3.2.5), T AV2.5	US, FR	Ti-Al3-V2.5
Ti-3Al-7V-3.5Mo-10Cr	(TS6)	UR	Ti-Al3-V7-Mo3.5-Cr 10
Ti-3Al-8V-4Mo-6Cr-4Zr	(Beta C)	US, FR	Ti-Al3-V8-Mo4-Cr6-Zr4
Ti-3Al-8V-8Mo-2Fe	(3.8.8.2)	US	Ti-Al3-V8-Mo8-Fe2
Ti-10V-3Al-2Fe	Development	US	Ti-Al3-V 10-Fe2
Ti-3Al-13V-11Cr	(3.13.11), (B 120)	US, FR, GY	Ti-Al3-V 13-Cr 11
Ti-3Al-1.5(Cr+Fe+Si)	(AT3)	UR	Ti-Al3-(Cr+Fe+Si)1.5
Ti-4Al-4Nb	(IRM1)	UR	Ti-Al4-Cb/Nb4
Ti-4Al-4Nb-0.1Re	(IRM2)	UR	Ti-Al4-Cb/Nb4-Re0.1
Ti-4Al-4.5Fe	(IRM6)	UR	Ti-Al4-Fe4.5
Ti-4Al-1.5Mn	(VT4)	UR	Ti-Al4-Mn1.5
Ti-4Al-4Mn	(IMI 314), (T A4M)	UK, FR	Ti-Al4-Mn4
Ti-4Al-1V-3Mo	(VT14), (4.1.3)	US, FR, UR	Ti-Al4-V1-Mo3
Ti-4Al-1V-3Mo-0.25Si	(VT14L)	UR	Ti-Al4-V1-Mo3-Si0.2
Ti-4Al-4Mo-2Sn-0.5Si	(IMI 550), T A4DE	UK, FR, GY	Ti-Al4-Mo4-Sn2-Si0.5
Ti-4Al-4Mo-4Sn-0.5Si	(IMI 551)	UK	Ti-Al4-Mo4-Sn4-Si0.5
Ti-4Al-1V-3Mo	(4.1.3), (VT14)	US, UR	Ti-Al4-V1-Mo3
Ti-4Al-2V	(IMP 9)	UR	Ti-Al4-V2
Ti-4.25Al-1.5Mn	(OT4)	UR	Ti-Al4.25-Mn1.5
Ti-4.5Al-5Mo-1.5Cr	Development	US	Ti-Al4.5-Mo5-Cr1.5
Ti-4.5Al-1.5(Cr+Fe+Si)	(AT4)	UR	Ti-Al4.5-(Cr+Fe+Si)1.5
Ti-5Al	(VT5)	UR	Ti-Al5
Ti-5Al-3Cr-1Fe	(VT3)	UR	Ti-Al5-Cr3-Fe1
Ti-5Al-6Sn-2Zr-1Mo-0.25Si	(5621S)	US	Ti-Al5-Sn6-Zr2-Mo1-Si0.25
Ti-5Al-2Sn-2Zr-4Mo-4Cr	(T1 17)	US, UK, FR, UR	Ti-Al5-Sn2-Zr2-Mo4-Cr4
Ti-5Al-0.5Si	(VT5L)	UR	Ti-Al5-Si0.5
Ti-5Al-2.5Sn	(A 110), IMI 317	US, UK, FR, GY, UR	Ti-Al5-Sn2.5

TABLE 1A. (Continued)

Nominal Composition Wt % (Conventional Format)	Some Common Names/Alloys	Country Code	Nominal Composition Wt % (Computerized Format)
Ti-5Al-2.5Sn ELI	(A-110 ELI)	US,GY	Ti-Al5-Sn2.5 ELI
Ti-5Al-5Sn-5Zr	(LT23)	GY	Ti-Al5-Sn5-Zr5
Ti-5Al-5V-5Mo-1.3Cr-1Fe	(VT22)	UR	Ti-Al5-V5-Mo5-Cr1.3-Fe1
Ti-5Al-2Zr	(T-A6ZW)	FR	Ti-Al5-Zr2
Ti-5.5Al-4V	(VT6S)	UR	Ti-Al5.5-V4
Ti-6Al-1.5Mn-1.5Zr	(OT4 2)	UR	Ti-Al6-Mn1.5-Zr1.5
Ti-6Al-5Zr-0.5Mo-0.2Si	(IMI 685)	UK,FR,GY	Ti-Al6-Zr5-Mo0.5-Si0.2
Ti-6Al-2Cb-1Ta-0.8Mo	(6-2-1-1)	US	Ti-Al6-Cb/Nb2-Ta1-Mo0.8
Ti-6Al-2Sn-1.5Zr-1Mo-0.35Bi-0.1Si	(Ti-11)	US	Ti-Al6-Sn2-Zr1.5-Mo1-Bi0.35-Si0.1
Ti-6Al-2Sn-5Zr-1Mo-0.25Si	(T-651A)	FR	Ti-Al6-Sn2-Zr5-Mo1-Si0.25
Ti-6Al-11Zr-1Mo-0.15Si	(VT18)	UR	Ti-Al6-Zr11-Mo1-Si0.15
Ti-6Al-2Mo-2Cr-1Fe-0.2Si	(VT3-1),(VT3-1L)	UR	Ti-Al6-Mo2-Cr2-Fe1-Si0.2
Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.2Si	(6-2-2-2)	US,FR	Ti-Al6-Sn2-Zr2-Mo2-Cr2-Si0.2
Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	US,FR,GY	Ti-Al6-Sn2-Zr4-Mo2
Ti-6Al-5Zr-4Mo-1Cu-0.2Si	(IMI 700)	UK	Ti-Al6-Zr5-Mo4-Cu1-Si0.2
Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	US,FR	Ti-Al6-Sn2-Zr4-Mo6
Ti-6Al-0.5V-6Sn-6Zr-0.5Cu-0.5Fe	(T-A6V6E2ZR)	FR	Ti-Al6-V0.5-Sn6-Zr6-Cu0.5-Fe0.5
Ti-6Al-5Zr-0.7Mo-1V-0.3Cr-0.2Si	(VT21L)	UR	Ti-Al6-Zr5-Mo0.7-V1-Cr0.3-Si0.2
Ti-6Al-9V ELI	(6-4 ELI)	US,GY	Ti-Al6-V9 ELI
Ti-6Al-4V	(6-4),(IMI-318)	US,UK,FR,GY,UR	Ti-Al6-V4
Ti-6Al-4V-3Co	(T-A6V4K3)	US,FR	Ti-Al6-V4-Co3
Ti-6Al-4V-0.2Si	(VT6L)	UR	Ti-Al6-V4-Si0.2
Ti-6Al-6V-2Sn	(6-6-2),(3 7174)	US,FR,GY	Ti-Al6-V6-Sn2
Ti-6Al-6V-2Sn-0.5Cu-0.5Fe	(T-A6V6E2)	FR	Ti-Al6-V6-Sn2-Cu0.5-Fe0.5
Ti-6Al-6V-2Sn-6Zr	(Ti-662Zr)	FR	Ti-Al6-V6-Sn2-Zr6
Ti-6Al-5Zr-1W-0.2Si	(IMI 684)	UK,FR	Ti-Al6-Zr5-W1-Si0.2
Ti-6Al-1.5(Cr+Fe+Si)	(AT6)	UR	Ti-Al6-(Cr+Fe+Si)1.5
Ti-6.5Al-3.5Mo-0.25Si	(VT8)	UR	Ti-Al6.5-Mo3.5-Si0.25
Ti-6.5Al-3.5Mo-2Zr(or Sn)-0.25Si	(VT9),(VT9L)	UR	Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25
Ti-6.5Al-2Zr-1Mo-1V	(VT20)	UR	Ti-Al6.5-Zr2-Mo1-V1
Ti-7Al-4Mo	(7-4),(T-A7D)	US,FR,GY,UR	Ti-Al7-Mo4
Ti-7Al-1.5(Fe+Cr+Si+B)	(AT8)	UR	Ti-Al7-(Fe+Cr+Si+B)1.5
Ti-8Al-1Mo-1V	(8-1-1),(T-A8DV)	US,FR,GY	Ti-Al8-Mo1-V1
Ti-45Cb		US	Ti-Cb/Nb45
Ti-2Cu	(T-U2),(3 7124)	US,FR,GY	Ti-Cu2
Ti-2.5Cu	(IMI 230),(T-U2)	UK,FR	Ti-Cu2.5
Ti-3Cr-3Mn-3Fe	(IMP 6-1)	UR	Ti-Cr3-Mn3-Fe3
Ti-8Mn	(8Mn)	US	Ti-Mn8
Ti-0.3Mo-0.8Ni			Ti-Mo0.3-Ni0.8
Ti-2.5Zr-1.5Mo	(AT2)	UR	Ti-Zr2.5-Mo1.5
Ti-4.5Sn-6Zr-11.5Mo	(Beta III)	US,FR	Ti-Sn4.5-Zr6-Mo11.5
Ti-15Mo	(IMI 205)	UK	Ti-Mo15
Ti-32Mo	(4201)	UR	Ti-Mo32
Ti-32Mo-1.5Nb	(4203)	UR	Ti-Mo32-Cb/Nb1.5
Ti-1 to 2Ni		US	Ti-Ni1 to 2
Ti-0.15 to 0.25Pd	(Pd Alloy)	US	Ti-Pd0.15 to 0.25
Ti-0.15 to 0.30Pd	(4200)	UR	Ti-Pd0.15 to 0.30
Ti-5Ta	(4204)	UR	Ti-Ta5
Ti-0.15 to 0.20Pd	(Pd Alloy)	US,UK,FR,GY,UR	Ti-Pd0.15 to 0.20

TABLE 1B. PHYSICAL PROPERTIES OF US AND NON-US TITANIUM ALLOY SYSTEMS BY THEIR NOMINAL
CHEMICAL COMPOSITION (Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Density		Thermal Conductivity		Thermal Expansion Coefficient, X10 ⁻⁶		Specific Heat		Beta Transus	
			kg m ³	lb/in ³	watt/m K	Btu/hr ft ² F ft	m/m/C	in/in/F	J/kg K	Btu/lb/F	C	F
Ti-unalloyed powder (powder)		α										
Ti-unalloyed sponge (sponge)		α										
Ti-unalloyed-100 (high purity)		α										
Ti-unalloyed-99.0 CP, 70 ksi YS		α	4,540	0.164	16.96	9.8	8.6	4.8	540	0.129	954	1,750
Ti-unalloyed-99.2 CP, 55 ksi YS		α										
Ti-unalloyed-99.5 CP, 40 ksi YS		α	4,520	0.163	16.43	9.5	8.6	4.8	525	0.125	921	1,680
Ti-unalloyed-99.6 CP, 25 ksi YS		α	4,520	0.163	15.77	9.0	8.6	4.8	520	0.124	888	1,630
Ti-unalloyed-99.9 CP (high purity)		α										
Ti-Al1 Mn1	(USSR)(OT4.0)	near-α										
Ti-Al1-V8 Fe5	(185)	near-β	4,650	0.168							830	1,525
Ti-Al1.5 Mn1.5												
Ti-Al2 Mn1.5												
Ti-Al2 Mn2	(USSR)(OT4.1)	α+β										
Ti-Al2-Mo4 Sn 11-S0.3	(BR)IMI-315	α+β										
Ti-Al2-V 11 Sn2-Zr 11		α+β	4,820	0.174								
Ti-Al2.25-Mo1 Sn 11-Zr5-S0.2	(transage 129)	β	4,820	0.174	6.58	3.8	9.0	5.0	500	0.120	943	1,730
Ti-Al2.25-Mo4 Sn 11-S0.3	(BR)IMI-679	near-α	4,840	0.175	7.06	4.1	9.2(°A)	5.1(°A)				
Ti-Al2.25-Mo4 Sn 11-S0.3	(BR)IMI-680	near-α										
Ti-Al2.2 Sn 11-Zr5-S0.4												
Ti-Al2.5-Mo4 Sn2-S0.5		near-α										
Ti-Al2.5-V4.5 Mo5	(USSR)(VT16)	near-β										
Ti-Al2.5-V5 Mo5-Cr1.3-Fe1	(USSR)(VT22)	near-β										
Ti-Al2.5-V 16												
Ti-Al2.9 V 15												
Ti-Al3-C5		α+β										
Ti-Al3-Mn1.5	(USSR)(OT4)	α+β	4,680	0.168	7.49	4.3	10.3(°B)	5.7(°B)			935	1,715
Ti-Al3-Mo0.5-Sn6-Zr5-S0.4			4,650	0.168	7.06	4.1	10.4(°B)	5.8(°B)				
Ti-Al3-Mo2-Sn6-Zr5-S0.4												
Ti-Al3-Mo7-Cr5.5-Fe3	(USSR)(IVT.1)	β										
Ti-Al3-Mo7.5-Cr 11	(USSR)(VT15)	β										
Ti-Al3-Sn6-Zr5-S0.5			4,760	0.172	7.06	4.1	10.4(°B)	5.8(°B)				
Ti-Al3-V2.5	(3.2.5)	α+β	4,490	0.162	7.27	4.2						
Ti-Al3-V7 Mo3.5-Cr 10	(USSR)(TS6)	β										
Ti-Al3-V8 Mo4-Zr4-C6	(beta C)	β	4,820	0.174			9.7	5.4			793	1,460
Ti-Al3-V8 Mo8 Fe2	(8.8.2.3)	β	4,850	0.175			7.7	4.3				
Ti-Al3-V 13-Cr 11	(13.11.3)	β	4,820	0.175	11.24	6.5	9.4	5.2	500	0.120	719	1,325
Ti-Al3-(Cr+Fe+S)1.5	(USSR)(AT3)	α+β										

TABLE 1B. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Typical Physical Properties										
			Density kg/m ³ lb/in ³	Thermal Conductivity		Thermal Expansion		Specific Heat		Beta Transus C F			
				Btu/hr ft ² F ft	watt/m K	Coefficient, X10 ⁻⁶ m/m°C in/in/F	J/kg K	Btu/lb/F					
Ti-44 Cu-Nb4	(USSR)(IRM1)	α+β											
Ti-44 Cu-Nb4 Re0.1	(USSR)(IRM2)	α+β											
Ti-44 Mn1.5	(USSR)(VT4)	α+β											
Ti-44 Mn4	(BR)(MI-314)	α+β											
Ti-44 Mo4													
Ti-44 Mo4 Sn2 Si0.5	(BR)(MI-550)	α+β	4,600	0.166	7.53	4.35	8.8	4.9		975	1,787		
Ti-44 Mo4 Sn4 Si0.5	(BR)(MI-551)	α+β											
Ti-44 V1 Mo3	(4-3-1)(VT14)	α+β	4,520	0.163	6.58	3.8	9.0	5.0	545	0.130	957	1,755	
Ti-44 V1 Mo3 Si0.2	(USSR)(VT14L)	α+β											
Ti-44.5 Sn2.5													
Ti-44.5 V3.5	(USSR)(VT6S)	α+β											
Ti-44.5-(Cr+Fe+Si)1.5	(USSR)(AT4)	α+β											
Ti-45	(USSR)(VT5)	α											
Ti-45 Cr2.75 Fe1.25		α+β											
Ti-45 Mo1 Sn6 Zr2 Si0.2	(5621S)	near-α	4,520	0.163						1,010	1,850		
Ti-45 Mo1.2 Cr1.4 Fe1.4		α+β											
Ti-45 Mo4 Sn2 Zr2 Cr4	(TI-17)	α+β	4,650	0.168			5.2	5.1		871	1,600		
Ti-45 Si0.5	(USSR)(VT5L)	α dispers.											
Ti-45 Sn2 Zr5		α											
Ti-45 Sn2.5 EL1	(A-110 EL1)	α	4,490	0.161	7.79	4.5	9.4	5.2	525	0.125	1,043	1,910	
Ti-45 Sn2.5	(A-110)(VT5.1)	α	4,490	0.161	7.79	4.5	9.4	5.2	525	0.125	1,038	1,900	
Ti-45 Sn5 Zr5		α	4,690	0.166	6.28	3.6	9.0	6.0		990	1,814		
Ti-45 Zr5 Si0.3 W1													
Ti-45.4 Mo1.25 Cr1.4 Fe1.3													
Ti-46 Mn1.5(w/w) Zr1.5)	(USSR)(OT4.2)	α+β											
Ti-46 Mo0.5 Si0.5		α+β	4,450	0.161			10.0	5.6		1,030	1,886		
Ti-46 Mo0.5 Zr5 Si0.2	(BR)(MI-685)	α+β	4,490	0.162						1,010	1,850		
Ti-46 Mo0.8 Cu Nb2 Ta1	(6-2-1-1)	near-α											
Ti-46 Mo1 Cr1.5 Fe1.5													
Ti-46 Mo1 Sn2 Zr1.5 Si0.1 B0.35	(TI-11)	near-α	4,490	0.162									
Ti-46 Mo1 Zr1.1 Si0.15	(USSR)(VT18)	near-α											
Ti-46 Mo2 Cr2 Fe1 Si0.2	(USSR)(VT3-1)	α+β											
Ti-46 Mo2 Sn2 Zr2 Cr2 Si0.2	(6-2-2-2)	α+β	4,490	0.162						969	1,775		
Ti-46 Mo2 Sn2 Zr4	(6-2-4-2)	α+β	4,540	0.164	6.06	3.5	9.9	5.5	525	0.125	990	1,815	
Ti-46 Mo4 Zr5 Cu1 Si0.2	(BR)(MI-700)	α+β	4,540	0.164	6.06		10.1(°C)	5.6(°C)					
Ti-46 Mo5 Sn2 Zr4	(6-2-4-6)	α+β	4,650	0.169	7.09	4.1	9.4	5.2		932	1,710		

TABLE 1B. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Typical Physical Properties									
			Density		Thermal Conductivity		Thermal Expansion		Specific Heat		Beta Transus	
			kg/m ³	lb/in ³	watt/m K	Btu/hr ft ² F ft	m/m/C	in/in/F	J/kg K	Btu/lb/F	C	F
Ti-Al6 V0.5 Sn-6 Zr-6 Fe-0.5 Cu-0.5	(FR)T-A6V6E2Zr	near- α										
Ti-Al6 V1 Mo-0.7 Zr-5 Cu-0.3 Sn-0.2	(USSR)(VT21L)	$\alpha+\beta$	4,430	0.161	7.27	4.2	9.5	5.3	565	0.135	993	1,820
Ti-Al6 V4 ELI	(6.4)ELI	$\alpha+\beta$	4,430	0.161	7.27	4.2	9.5	6.3	565	0.135	993	1,820
Ti-Al6 V4	(6.4)(VT6)	$\alpha+\beta$										
Ti-Al6 V4 Co-3	(FR)T-A6V4K3	$\alpha+\beta$										
Ti-Al6 V4 Sn-0.2	(USSR)(VT6L)	$\alpha+\beta$	4,540	0.164	7.27	4.2	7.6	4.2	670	0.160	946	1,735
Ti-Al6 V6 Sn-2	(6.6.2)	$\alpha+\beta$										
Ti-Al6 V6 Sn-2 Cu-Fe-1		$\alpha+\beta$										
Ti-Al6 V6 Sn-2 Zr-6	(FR)T-662Zr	$\alpha+\beta$										
Ti-Al6 Zr-1.5 (Mn-1.5)	(USSR)(OT4.2)	$\alpha+\beta$										
Ti-Al6 Zr-5 Sn-0.3 W-1	(BR)IMI-684	$\alpha+\beta$	4,480	0.162			9.9(*D)	5.5(*D)				
Ti-Al6 (Cr-Fe-Si)1.5	(USSR)(AT6)	$\alpha+\beta$										
Ti-Al6.5 Mo-3.5 Sn-0.25	(USSR)(VT9L)	$\alpha+\beta$										
Ti-Al6.5 Mo-3.5 Sn-0.25	(USSR)(VT9)	$\alpha+\beta$										
Ti-Al6.5 Mo-3.5 Sn-0.25	(USSR)(VT8)	$\alpha+\beta$										
Ti-Al6.5 V1 Mo-1 Zr-2	(USSR)(VT20)	near- α										
Ti-Al7 Co-Nb-2 Ta-1		α										
Ti-Al7 Mo-4	(7.4)	$\alpha+\beta$	4,490	0.162	6.58	3.8	9.0	5.0	525	0.125	1,004	1,840
Ti-Al7 Zr-12		α										
Ti-Al8 Co-Nb-2 Ta-1												
Ti-Al8 V1 Mo-1												
Ti-Al8 V1 Mo-1 Co-5		near- α	4,380	0.159	6.58	3.8	8.5	4.7	500	0.120	1,038	1,900
Ti-Al8 Zr-8 Co-Nb-1												
Ti-Al9 Sn-2.5												
Ti-Cb-Nb-4.5												
Ti-Cr-3 Fe-1.5												
Ti-Cu-2		α dispers.	4,560	0.165	12.97	7.5	9.0	5.0			880	1,616
Ti-Cu-2.5	(BR)IMI-230	α dispers.										
Ti-Mn-8	(8Mn)	$\alpha+\beta$	4,710	0.171	11.07	6.4	10.8	6.0	495	0.118	801	1,475
Ti-Mo-1.5 Zr-2.5	(USSR)(AT2)	$\alpha+\beta$										
Ti-Mo-2 Co-2 Fe-2		$\alpha+\beta$										
Ti-Mo-11.5		β										
Ti-Mo-11.5 Sn-4.5 Zr-6	(beta III)	β	5,070	0.183			7.6		746		746	1,375
Ti-Mo-15	(BR)IMI-205	β										
Ti-Mo-32	(USSR)(4201)	β										
Ti-Mo-32 Co-Nb-1.5	(USSR)(4203)	β										

TABLE 1B. (Continued)

Nominal Composition Wt % Computerized Format	Common Name/Alloy	Alloy Type	Typical Physical Properties										
			Density		Thermal Conductivity		Thermal Expansion		Specific Heat		Beta Transus		
							Coef- ficient, X10 ⁻⁶						
			kg/m ³	lb/in ³	watt/m K	Btu/hr ft ² F ft	m/m/C	in/in/F	J/kg K	Btu/lb/F	C	F	
Ti-Ni1-2		α dispers.											
Ti-Ta5	(USSR)4204)	α	4,420	0.163	16.44	9.5	8.6	4.8	5.25	0.125	913	1,675	
Ti-Pd0.15-0.20	(Pd alloy)4200	α											

(*A) 70 to 570 F (21 to 299 C).

(*B) 70 to 1290 F (21 to 699 C).

(*C) 70 to 932 F (21 to 500 C).

(*D) 70 to 1110 F (21 to 599 C).

TABLE 1C. MECHANICAL PROPERTIES OF US AND NON-US TITANIUM ALLOY SYSTEMS BY THEIR NOMINAL
CHEMICAL COMPOSITION (Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties				
					Ultimate Tensile Strength	Tensile Yield Strength	Elongation Percent	Modulus of Elasticity	
					MN/m ²	KSI		MN/m ²	PSI x 10 ⁵
Ti-unalloyed-powder	(powder)								
Ti-unalloyed-sponge	(sponge)								
Ti-unalloyed-sponge, compressed									
Ti-unalloyed-100	(high purity)	α							
Ti-unalloyed-99.0, CP, 70 ksi YS	(CP)(grade 4)	α	Sheet	Ann	550	480	15	104,000	15.1
Ti-unalloyed-99.2, CP, 55 ksi YS	(CP)(grade 3)	α							
Ti-unalloyed-99.5, CP, 40 ksi YS	(CP)(grade 2)	α	Sheet	Ann	345	275	22	103,000	14.9
Ti-unalloyed-99.6, CP, 25 ksi YS	(CP)(grade 1)	α	Sheet	Ann	240	170	25	103,000	14.9
Ti-unalloyed-99.9, CP	(high purity)	α							
Ti-Al1-Mn1	(USSR)(IOT4.0)	near- α							
Ti-Al1-V8-Fe5	(185)	near- β	Bar	Sta	1,450	1,380	6		
Ti-Al1.5-Mn1.5									
Ti-Al2-Mn1.5	(USSR)(IOT4.1)	$\alpha+\beta$	Sheet	Ann	655	560	20		
Ti-Al2-Mn2	(BR)(IMI-315)	$\alpha+\beta$							
Ti-Al2-Mo4-Sn 11-Si0.3		$\alpha+\beta$							
Ti-Al2-V 11-Sn2-Zr 11	(transage 129)	β	Bar	Sta	1,295	1,045	10		
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2	(BR)(IMI-679)	near- α	Plate	Ann	1,380	1,275	6	96,500	4.0
Ti-Al2.25-Mo4-Sn 11-Si0.3	(BR)(IMI-680)		Sheet	Ann	1,000	895	10	100,000	14.5
Ti-Al2.2-Sn 11-Si0.4		near- α							
Ti-Al2.5-V 16									
Ti-Al2.5-Mo4-Sn2-Si0.5									
Ti-Al2.5-V4.5-Mo5		near- β							
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1		near- β							
Ti-Al2.9-V 15									
Ti-Al3-Cr5		$\alpha+\beta$							
Ti-Al3-Mn1.5	(USSR)(IOT4)	$\alpha+\beta$	Sheet	Ann	760	585	28		
Ti-Al3-Mo0.5-Sn6-Zr5-Si0.4									
Ti-Al3-Mo2-Sn6-Zr5-Si0.4	(USSR)(VT16)								
Ti-Al3-Mo7-Cr5.5-Fe3	(USSR)(VT22)								
Ti-Al3-Mo7.5-Cr 11									
Ti-Al3-Sn6-Zr5-Si0.5	(USSR)(IVT-1)	β	Sheet	Sta	1,475	214	4		
Ti-Al3-V2.5	(USSR)(VT15)	α	Bar	Ann	895	130	16	115,000	16.7
Ti-Al3-V7-Mo3.5-Cr 10	(3.2.5)	$\alpha+\beta$	Sheet	Ann	620	515	20	103,000	15.0
Ti-Al3-V8-Mo4-Zr4-Cr6	(USSR)(TS6)	β							
Ti-Al3-V8-Mo8-Fe2	(Beta C)	β	Bar	Sta	1,240	1,170	6	101,000	14.7
Ti-Al3-V 13-Cr 11	(8.8.2.3)	β	Sheet	Sta	1,310	1,240	8	114,000	16.5
	(13-11-3)	β	Sheet	Ann	860	825	15	100,000	14.5

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties				
					Ultimate Tensile Strength		Tensile Yield Strength		Modulus of Elasticity
					MIN/m ²	KSI	MIN/m ²	KSI	
Ti-40.3-(Cr+Fe-Si)1.5	(USSR)(AT3)		Sheet	Ann	790	115	770	112	
Ti-40.4-Cb/Nb4	(USSR)(IRM1)	$\alpha+\beta$	Sheet	Ann	890	129	750	109	
Ti-40.4-Cb/Nb4-Re0.1	(USSR)(IRM2)	$\alpha+\beta$	Sheet	Ann	925	134	870	126	
Ti-40.4-Mn1.5	(USSR)(VT4)	$\alpha+\beta$							
Ti-40.4-Mn4	(BR)(IMI-314)	$\alpha+\beta$		None	835	121			
Ti-40.4-Mo4									
Ti-40.4-Mo4-Sn2-Si0.5	(BR)(IMI-550)	$\alpha+\beta$	Bar	Ann	1,235	179	1,125	163	
Ti-40.4-Mo4-Sn4-Si0.5	(BR)(IMI-551)	$\alpha+\beta$	Bar	Ann	1,050	152	920	133	17.0
Ti-40.4-V1-Mo3	(4-3-1)(VT14)	$\alpha+\beta$	Sheet	Ann	860	125	790	115	16.1
Ti-40.4-V1-Mo3-Si0.2	(USSR)(VT14L)	$\alpha+\beta$							
Ti-40.4-Sn2.5									
Ti-40.4-S-V3.5	(USSR)(VT6S)	$\alpha+\beta$	Sheet	Ann	955	137	905	131	
Ti-40.4-S-(Cr+Fe-Si)1.5	(USSR)(AT4)			None	855	124			
Ti-40.5	(USSR)(VT5)	α							
Ti-CrFe4		$\alpha+\beta$							
Ti-40.5-Cr2.75-Fe1.25		$\alpha+\beta$							
Ti-40.5-Mo1-Sn6-Zr2-Si0.2	(5621S)	near- α	Bar	Ann	965	140	895	130	16.5
Ti-40.5-Mo1.2-Cr1.4-Fe1.4	(Ti-17)	$\alpha+\beta$	Bar	Sta	1,170	170	1,105	160	16.0
Ti-40.5-Mo4-Sn2-Zr2-Cr4	(USSR)(VT5L)	$\alpha+\beta$ α dispers.							
Ti-40.5-Si0.5		α							
Ti-40.5-Sn2-Zr5		α	Sheet	Ann	725	105	655	95	16.0
Ti-40.5-Sn2.5 -Li	(A-110 EL1)	α	Sheet	Ann	825	120	795	115	16.0
Ti-40.5-Sn2.5	(A-110)(VT5.1)	α	Bar	Ann	820	119	760	110	16.0
Ti-40.5-Sn5-Zr5		α							
Ti-40.5-Zr5-Si0.3-W1									
Ti-40.5-Mo1.25-Cr1.4-Fe1.3									
Ti-40.6-Mn1.5(w/wo Zr1.5)	(USSR)(OT4-2)	$\alpha+\beta$							
Ti-40.6-Mo0.5-Si0.5		$\alpha+\beta$	Bar	Aged	990	144	850	123	17.6
Ti-40.6-Mo0.5-Zr5-Si0.2	(BR)(IMI-685)	$\alpha+\beta$	Plate	Ann	770	112	670	97	16.0
Ti-40.6-Mo0.8-Cb/Nb2-Ta1	(6-2-1-1)	near- α							
Ti-40.6-Mo1-Cr1.5-Fe1.5									
Ti-40.6-Mo1-Sn2-Zr1.5-Si0.1-Bi0.35	(Ti-11)	near- α	Bar	β Ann	1,000	145	940	136	16.0
Ti-40.6-Mo1-Zr11-Si0.15	(USSR)(VT18)	near- α							
Ti-40.6-Mo2-Cr2-Fe1-Si0.2	(USSR)(VT3-1)	$\alpha+\beta$	Forging	Ann	1,050	152	950	138	17.5
Ti-40.6-Mo2-Sn2-Zr2-Cr2-Si0.2	(6-2-2-2-2)	$\alpha+\beta$	Plate	Sta	1,205	175	1,070	155	12
Ti-40.6-Mo2-Sn2-Zr4	(6-2-4-2)	$\alpha+\beta$	Bar	Ann	895	130	825	120	16.5

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties				
					Ultimate Tensile Strength		Tensile Yield Strength		Modulus of Elasticity
					MIN/m ²	KSI	MIN/m ²	KSI	
Ti-Al6-Mo4-Zr5-Cu1-Si0.2	(BRI)MI-700 (6-2-4-6)	$\alpha+\beta$	Forging	Sta	1,450	210	1,270	184	114,000
Ti-Al6-Mo6-Sn2-Zr4	(FRIT) A6V6E2Zr	$\alpha+\beta$	Bar	Sta	1,275	185	1,170	170	
Ti-Al6-V0.5-Sn6-Zr6-Fe0.5-Cu0.5	(USSR)(VT21L)	near α							
Ti-Al6-Mo0.7-Zr5-Cr0.3-Si0.2	(6-4) ELI	$\alpha+\beta$	Sheet	Ann	895	130	825	120	110,000
Ti-Al6-V4	(6-4)	$\alpha+\beta$	Sheet	Ann	895	130	825	120	114,000
Ti-Al6-V4-Co3	(FRIT) A6V4K3	$\alpha+\beta$							
Ti-Al6-V4-Si0.2	(USSR)(VT6L)	$\alpha+\beta$	Sheet	Ann	1,035	150	965	140	114,000
Ti-Al6-V6-Sn2	(6-6-2)	$\alpha+\beta$							16.5
Ti-Al6-V6-Sn2-Cu+Fe1	(FRIT) A6V6E	$\alpha+\beta$							
Ti-Al6-V6-Sn2-Zr6	(FRIT) 662Zr	$\alpha+\beta$							
Ti-Al6-Zr1.5-Mn1.5	(USSR)(C14-2)	$\alpha+\beta$							
Ti-Al6-Zr1.5-Mn1.5	(BRI)MI-684	$\alpha+\beta$	Bar	Sta	1,035	150	910	182	17
Ti-Al6-(Cr+Fe+Si)11.5	(USSR)(AT6)	$\alpha+\beta$	Sheet	Ann	1,110	161	1,080	157	13
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	(USSR)(VT9)	$\alpha+\beta$							
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	(USSR)(VT9L)	$\alpha+\beta$							
Ti-Al6.5-Mo3.5-Si0.25	(USSR)(VT8)	$\alpha+\beta$	Bar	Ann	1,110	160	1,005	146	12
Ti-Al6.5-V1-Mo1-Zr2	(USSR)(VT20)	near α							
Ti-Al7-Cb/Nb2-Ta1		α							
Ti-Al7-Mo4	(7-4)	$\alpha+\beta$	Bar	Ann	980	142	910	132	12
Ti-Al7-Zr 12		α							16.2
Ti-Al8-Cb/Nb2-Ta1									
Ti-Al8-V1-Mo1									
Ti-Al8-V1-Mo1-Co.5	(8-1-1)	near α	Bar	Ann	895	130	825	120	10
Ti-Al8-Zr8-Cb/Nb1									18.0
Ti-Al9-Sn2.5									
Ti-Cb/Nb 45									
Ti-Cr3-Fe1.5									
Ti-Cu2		α dispers	Sheet	Ann	540	78	460	67	15
Ti-Cu2.5	(BRI)MI-230	α dispers							16.4
Ti-Mn8	(8Mn)	$\alpha+\beta$	Sheet	Ann	945	137	960	125	15
Ti-Mo1.5-Zr2.5	(USSR)(AT2)	$\alpha+\beta$							16.0
Ti-Mo2-Cr2-Fe2		$\alpha+\beta$							
Ti-Mo 11.5		β							
Ti-Mo 11.5-Sn4.5-Zr6	(Beta III)	β	Bar	Ann	895	130	825	120	20
								83,000	12.0

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties				
					Ultimate Tensile Strength	Tensile Yield Strength		Elongation Percent	Modulus of Elasticity
					MN/m ²	MN/m ²	KSI		
Ti-Mo 15	(BR)MT-205	β							
Ti-Mo 32	(USSR)(4201)	β							
Ti-Mo 32-Cb/Nb 1.5	(USSR)(4203)	β							
Ti-Ni 1-2		α dispers.							
Ti-Ta 5	(USSR)(4204)	α							
Ti-Pd 0.15-0.20	(Pd alloy)4200	α	Sheet	Ann	345	275	50	22	103,000
									14.9

(*A) Ann=annealed, β Ann= β annealed, St=solution treated and aged.

TABLE 1D. CORRELATION OF TITANIUM AND TITANIUM ALLOY NOMINAL CHEMICAL COMPOSITIONS WITH COMMON NAMES, ALLOY TYPES, UNIFIED NUMBER SYSTEM (UNS), AND COUNTRY STANDARDS
(Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B248-74	ASTM (US) Other ASTM Specifications	MIL-T-9047E	Military (US) Other Military Specifications
Ti unalloyed powder	(powder)	u						MIL T 13405C
Ti unalloyed sponge	(sponge)	u				B299/ML 1201 (SL 120) (GP 1), (MD 120)		MIL T 12118A*
Ti unalloyed 100	(high purity)	u						
Ti unalloyed 99.0 CP 70 ksi YS	(CP) (Grade 4)	u	Appendix 4	4901, 4921	Grade 4	B265 (Gr 4), F67 (Gr 4), B367 (Gr 4), B381 (Gr 4), F 4)	Composition 1	MIL F 83142 (Comp 1) MIL T 9046, I (Comp B) MIL T 009047 (Comp 1) MIL T 81556, I (Comp D) MIL T 83142 (Comp 1) MIL T 9046, I (Comp C) MIL T 009047 (Comp 1)
Ti unalloyed 99.2 CP 55 ksi YS	(CP) (Grade 3)	u	Appendix 4	4900	Grade 3	B265 (Gr 3), B367 (Gr 3), B381 (Gr 3), B337 (Gr 3), B338 (Gr 3), B363 (Gr 3), B381 (Gr 3), F 3), F 67 (Gr 3)	Composition 1	
Ti unalloyed 99.5 CP 40 ksi YS	(CP) (Grade 2)	u	Appendix 4	4902, 4941, 4942, 4951, 4953	Grade 2	B265 (Gr 2), B367 (Gr 2), B381 (Gr 2), B337 (Gr 2), B338 (Gr 2)	Composition 1	MIL T 83142 (Comp 1) MIL T 9046, I (Comp A) MIL T 009047 (Comp 1) MIL T 81556, I (Comp B)
Ti unalloyed 99.6 CP 25 ksi YS	(CP) (Grade 1)	u	Appendix 4		Grade 1	B381 (Gr 1), B338 (Gr 1), B337 (Gr 1), B265 (Gr 1), B367 (Gr 1), C 1)		
Ti unalloyed 99.9 CP Ti Al 1 Mn 1	(high purity) (UAA R) (OT 4.0)	u near u						
Ti Al 1.5 Mn 1.5 Ti Al 2 Mn 1.5	(USSR) (OT 4.1)	d+s						
Ti Al 2 Mn 2	(BR) (MI 315)	d+s						
Ti Al 2 Mn 4.5 Sn 11 S 0.3 Ti Al 2 V 11 Cr 2 Zr 11 Ti Al 2 25 W 6.1 Sn 11 Zr 5 S 0.2	(Ternage 129) (BR) (MI 679)	d+s near u		4974			Composition 1	MIL F 83142 (Comp 10) MIL T 009047 (Comp 10)

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series) and DTD (UK)	French Standards (FRI, A, C, M, AFNOR, and NF)	German Country Standards (DIN and DE), DIN	Soviet Country Standards (GOST)	Other Standards	
					Japanese Crescentation	American Welding Society (AWS)
Ti unalloyed powder				TU 48 05 30, VTU 9 3 67 VTU 10 68, VTU 3 80 GOST 17746 TU 90 100 110 120 130 150 TGV GOST 5303 TG 100 105	ISO 1119 SCS	Pyroelectric applications Insulator metallizing products Metallizing stock
Ti unalloyed sponge						
Ti unalloyed 100						
Ti unalloyed 99.0 CP 70 x 0.5	BS 2746 2TA7 2TA8 2TA9 (IMI 155 160) BS 3003, part 9, Gr. 5 (IMI 155 160)	AIR 9182 IT 60 AECMA T. P 04 (IMI 155 160) PUG 1UT60	DIN 3 7005 DIN 17850 17862 VDUT 230 (Gr. 4, KRUPP RT20) LW 2 7064 CONTINET 155 FUCHS IT 60	(VT1 2) (VT1 1)	ISO Resistant Ti SP L 7004	For the chemical industries Commercially pure Ti Chemical marine, offshore and aircraft engine parts, surgical implants, high speed fans, gas compressors, good formability and corrosion resistance, high strength
Ti unalloyed 99.2 CP 55 x 0.5	BS 3003 part 9, Gr. 3 (IMI 130) DTD 5003 5023B 5273 5283	AIR 9182 IT 50 AECMA T. P 05	DIN 3 7055 DIN 17862 17850 VDUT 200 (Gr. 3, KRUPP RT18) CONTINET 350		SP L 7002 JIS 4631 (TiH 49) 4600 TP 49 4630 TP 49 4970 TP TiH 49	
Ti unalloyed 99.5 CP 40 x 0.5	BS 2743 2TA3 2TA5 (IMI 125)	AECMA T. P 02 PUG 1UT40 AIR 9182 IT 40	VDUT 230 (Gr. 11) KRUPP RT115, LMO 140 CONTINET 135 DIN 3 7035 FUCHS IT 3	AMTU 451 451 VT1 01 OSTI 90000 9005 90027 90145 IVT1 01 TUI 5 111 83 21 92 6 IVT1 01	CSN 42 1490 1492 7790 7391 7590 7591 065 ON 42 4256 SP L 7002 JIS H4000 H4630 H4650 H4631 H4670 SP L 7001	
Ti unalloyed 99.6 CP 25 x 0.5	BS 3003 part 9, Gr. 2 (IMI 115) DTD 5033B 5013B (IMI 115)	AIR 9182 IT 35 (IMI 115) PUG 1UT35	VDUT (Gr. 1), LW 3 7034 (IMI 115) DIN 3 7025 DIN 17850 17862 17864 KRUPP RT12 CONTINET 130, FUCHS IT 2	OSTI 90000 90015 90045 90027 90145 IVT1 001 TUI 55 111 83 21 92 6 AMTU 451 475 VT1 001	ISO ductile Ti (duph) (IMI 115)	
Ti unalloyed 99.9 CP				AMTU 451 473 (OTA 0), OSTI 90000 90015 90027 90050 90107 H4024 (OTA 0) TUI 5 107 83 21 92 6 (OTA 0)		
Ti Al 1 Mn 1				AMTU 451 475 (OTA 1), OSTI 90015 90024 90050 90107 (OTA 1) TUI 5 107 83 21 92 6 (OTA 1)		
Ti Al 1.5 Mn 1.5						
Ti Al 2 Mn 1.5						
Ti Al 2 Mn 2	DTD 5043B (IMI 315)					For compressor discs and blades, fasteners, fuel systems, heat treatable for aircraft and marine components, high temperature use tensile limit 80-85% of TS
Ti Al 2 Mn 2.5 0.3						
Ti Al 2 V 11 Sn 2 Zr 11						
Ti Al 2.5 Mn 1.5 Sn 11 Zr 5 S 0.2	TA18 19 20 25 26 27 (IMI 679) DTD 5113 5273 (IMI 679)					Airframe and turbine engine parts (blades, discs, wheels, stators), fasteners, high stress stability at 900 F, good creep and short time strength

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNE Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348 74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Other Military Specifications	Military (US)
Ti-42.25 Mo-4.5 Sn-11 Si-0.25	(BR111M) 680								
Ti-42.5 Mo-4 Si-2 S-0.5	USSR (VT16)	near β							
Ti-42.5 V-4.5 Mo-5									
Ti-42.5 V-5 Mo-5 Cr-1.3 Fe-1	USSR (VT22)	near β							
Ti-42.5 V-16									
Ti-42.9 V-15									
Ti-43 Co-5		$\alpha+\beta$		4927*					
Ti-43 Mn-1.5	USSR (OT4)	$\alpha+\beta$							
Ti-43 Mo-5 Sn-6 Zr-5 Si-0.4		near α							
Ti-43 Mo-2 Sn-6 Zr-5 Si-0.4		$\alpha+\beta$							
Ti-43 Mo-7 Co-5.5 Fe-3	USSR (VT11)	β							
Ti-43 Mo-7 Si-0.11	USSR (VT15)	β							
Ti-43 Sn-6 Zr-5 Si-0.5		α							
Ti-43 V-5	(325)	$\alpha+\beta$		4943 4944					
Ti-43 V-7 Mo-3.5 Cr-10	USSR (TS6)	β							
Ti-43 V-8 Mo-4 Zr-4 Co-6	(Brfa C)	β						MIL T 9046 IV (Comp. C)	
Ti-43 V-8 Mo-8 Fe-2	(8823)	β						MIL T 9046 IV (Comp. D)	
Ti-43 V-13 Co-11	(13113)	β		4917			Compensation 12	MIL T R3147 (Comp. 12) MIL T 9046 IV (Comp. A) MIL T 009047 (Comp. 12) MIL R 81558 IV (Comp. A)	
Ti-43 Co-Fe-Si-1.5	USSR (AT3)	$\alpha+\beta$							
Ti-44 Co-Ni-4	USSR (IRM 1)								
Ti-44 Co-Ni-4 Ru-0.1	USSR (IRM 2)	$\alpha+\beta$							
Ti-44 Mn-1.5	USSR (VT4)	$\alpha+\beta$							
Ti-44 Mo-4	(BR11M) 314	$\alpha+\beta$		4925					
Ti-44 Mo-4									

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aeroplane Series), and DTD (UK)	French Standards (FRI), A.I.C.M., AFNOR, and NF	German Country Standards (IGY and GE), DIN	Soviet Country Standards (URI), GOST	Other Standards	
					Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-25 Mo-1 Sn-11 Si-0.25 Ti-25 Mo-4 Sn-2 Si-0.5 Ti-25 V-4.5 Mo-5	DTD ML60 DTD 5213 (IMI 680)	AIR IT E11 D4E		AMTU 552 553 (VT18), TU1 92 6 (VT16)		High strength alloy
Ti-25 V-5 Mo-5 Cr-1.3 Fe-1				AMTU 552 553 (VT22), TU1 92 1 (VT22), OSTI 90107 (VT22)		
Ti-25 V-16 Ti-25 V-15 Ti-25 Cr-5 Ti-25 Ni-1.5 Ti-25 Mo-0.5 Sn-6 Zr-5 S-0.4 Ti-25 Mo-2.5 Sn-6 Zr-5 S-0.4	(Hv.L. 65) (Hv.L. 60)			TU1 5065 5 068 5 064 (AT3)		For jet engine compressor components, discs, vanes, blades. For turbine compressor blades and discs up to 900 C. Good creep and tensile properties.
Ti-25 Mo-7 Cr-5.5 Fe-3 Ti-25 Mo-7.5 Cr-11 Ti-25 Mo-6 Zr-5 S-0.5	(Hv.L. 55)			(VT 1) (VT15)		For turbine compressor blades and discs, good properties to over 930 F (500 C), high temperature strength.
Ti-25 V-2.5		PUG (UTA JV)		ITS6		Aircraft hydraulic tubing (oil), combines strength, weldability, and formability.
Ti-25 V-7 Mo-3.5 Cr-10 Ti-25 V-8 Mo-4 Zr-4 Cr-6						Heavy sections where deep hardening high strength with good fracture toughness are required. Airframe components, high strength fasteners and rivets, torsion bars.
Ti-25 V-8 Mo-8 Fe-2						High strength, tough airframe sheet, plate, fasteners, and forged components for high temperature applications, good notch tough- ness, air hardened, good weldability.
Ti-25 V-13 Cr-11			KRUPP (LT 41), CONTIMET (VCRAL 13, 11, 3)			Advanced airframe applications, lightweight welded pressure vessels, airframe skins, suit- able for honeycomb, excellent formability, high strength fasteners, aerospace compo- nents, honeycomb barrels, heat treatable.
Ti-25 Cr-Fe-Si-1.5 Ti-25 Cr-Ni-4 Ti-25 Cr-Ni-4 Pd-1 Ti-25 Mn-1.5 Ti-25 Mo-4	DTD 5143 (IMI 314) (Hv.L. 40)			(AT3) (IRM 1) Early alloy, (IRM 2) Early alloy, ASTM 451 (V14)		
Ti-25 Mo-4				(IRM 3) Early Alloy		For aircraft and jet engine components, heat resistant, low density, airframe forgings, bolts, fasteners, good creep strength above 600 F.

TABLE 1D. (Continued)

TABLE 1D. (Continued)

Nominal Composition Wt % (Completed Format)	British Standards, BS (Aerospace Series, and DTD (UK))	French Standards (FBI), AECMA, AFNOR, and NF	German Country Standards (DIN and GEI, DIN)	Soviet Country Standards (GOST)	Other Standards	
					Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
T. A.4 M4 S-2 S0.5	TA29* 30° 31' 32' 33' 34' 41' TA35* 36° 37' 45' 46' 47' 48' 49' 50' 51' 57' (MI 550) IHv Lie 50: DTD 5203, 5233, 5343 5103, 5153 (MI 550) TA38 30 40 41 42 (MI 551) DTD 5203 5223 (MI 551) IHv Lie 51:	AIR (TA40E) AIR (TA4CE2) AECMA T. P 68	LW 3.7184 (draft), KRUPP (LT 34)	AMTU 451 461 475 (VT14, OST1 90000 90107 (VT14) (VT14), casting		High strength alloy, creep resistant up to 750 F (400 C) for compressor discs and blades, fuel systems, fasteners, heat treatable Very high strength titanium alloy for heavy duty service aircraft structural members, good creep properties Airframe applications, very high strength, good high temperature stability
T. A.4 M4 S4 S0.5				AMTU 451 475 (VT6S), TU1 83 21 92.6 (VT6S), OST1 90000 90024 90107 (VT6S)		
T. A.4 V1 M63				(A14)		
T. A.4 V1 M63 S0.2	TA14 15 16 17 (MI 317)			AMTU 451 475 (VT5), TU1 83 21 92.6 (VT5), OST1 90000 90107 (VT5)		For high temperature fasteners, aircraft structures, pseudophase alloy corrosion resistant
T. A.4 S V3 5						
T. A.4 S (C+Fe+S) 1.5						
T. A.5						
T. A.5 CFe4						Airframe components For jet engine components, good hot strength to 1000 F (538 C), see hardened
T. A.5 C2.75 Fe1.25						For use where high creep strength and are rated temperature are required as in jet engine components, alpha alloy
T. A.5 M6.1 S6.2 Z2 S0.2						
T. A.5 M6.1 Z C1.4 Fe1.4						
T. A.5 M4 S2 Z2 C4						
T. A.5 S0.5						
T. A.5 S4 S2.5						
T. A.5 S0.2 S EL1						
T. A.5 S2.5	TA14* 15* 16* 17* (MI 317) DTD 5083, 5093 (MI 317)	AECMA T. P 65 PUG (UTASE) AIR (TASE)	LW 3.7114 KRUPP (LT21) DIN 3.7115, CONTIMET (ALSN62)	AMTU 551 (VT5 1), TU1 83 21 92.6 (VT5 1), OST1 90000 90024 90107 (VT5 1)		Liquid hydrogen tankage, special grade, high pressure cryogenic vessels operating down to -123 F (-179 C) Weldable alloy for forgings and sheet metal parts such as aircraft engine compressor blades and ducting, steam turbine blades, good oxidation resistance and strength at 600 to 1100 F (316 to 593 C), good stability at elevated temperatures, engine cooling and supporting Turbine engines and airframe applications requiring high creep strength
T. A.5 S4 S2.5						
T. A.5 S4 S2.5						
T. A.5 S4 S0.3 W1						

TABLE 1D. (Continued)

Normal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348-74	ASTM (US) Other ASTM Specification	MIL T 9047E	Military (US) Other Military Specification
Ti-45.4 Mo-1.25 Cu-1.4 Fe-1.3				4979-4969				
Ti-46 Mo-1.5 Zr-1.5 W-0.07 Zr	(USSRIOT4-2)							
Ti-46 Mo-0.5 Si-0.5		u.s.						
Ti-46 Mo-0.5 Zr-0.5	(BRIMI 655)	u.s.						
Ti-46 Mo-0.8 Cu-0.2 Ti	(6-2-1-1)	near u.						MIL T 9046-10 (Comp. G) MIL R 81558-10 (Comp. D)
Ti-46 Mo-1 Cu-1.5 Fe-1.5								
Ti-46 Mo-1.5 Zr-1.5 Si-1.8 O-35	(T1-11)	near u.						
Ti-46 Mo-1 Zr-1.1 Si-0.15	(USSRIIVT18)	near u.						
Ti-46 Mo-2 Cu-2 Fe-1 Si-0.2	(USSRIIVT3-1)	u.s.						
Ti-46 Mo-2 Si-2 Zr-2 Cu-2 Si-0.2	(6-2-2-2)	u.s.						
Ti-46 Mo-2 Si-2 Zr-4	(6-2-4-2)	u.s.		4975-4976			Composition 11	MIL F 83142 (Comp. 11) MIL F 9046-10 (Comp. G) MIL T 81515-10 (Comp. B) MIL T 000047 (Comp. 11)
Ti-46 Mo-4 Zr-5 Cu-1 Si-0.2	(BRIMI 700)	u.s.						
Ti-46 Mo-6 Si-2 Zr-4	(6-2-4-6)	u.s.		4981			Composition 14	MIL T 80047 (Comp. 14)
Ti-46 V-0.5 Si-6 Zr-6 Fe-0.5 Cu-0.5	(FRIT ABV6E2Z)	near u.						
Ti-46 V-1 Mo-0.7 Zr-0.3 Si-0.2	(USSRIIVT12L)	near u.						
Ti-46 V-4 ELI	(6-4-ELI)	u.s.	Appendix 4	4907-4940-4956		F 116	Composition 2	MIL F 83142 (Comp. B) MIL R 81558 (Comp. B) MIL T 80046-10 (Comp. D) MIL T 000047 (Comp. Z) MIL T 81556-10 (Comp. B)

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards BS (Aerospace Series), and DTD (UK)	French Standards (SRI, AFCM, AFNOR, and NF)	German Country Standards (GV and GS), DIN	Some Country Standards (UR), GOST	Other Standards	Applications
					Japanese Crechomonkan	
T: Al-5.4 Mo-1.25 Cu-1.4 Fe-1.3						For aircraft propeller blades, cylinders and pistons, head forgings
T: Al-6 Mo-1.5 Zn-1.5 Ni-0.05 Mn-0.05				(O14 2)		
T: Al-6 Mo-0.5 Si-0.5						
T: Al-6 Mo-0.5 Zn-0.5 Si-0.2	BS TA43.44 (IMI 685)	AIR (T AG2D), AECMA T P 67 (UT685), AIR (T AL62H5D)	LW 3 7154 K RUPP ILT265			For use where high toughness, moderate strength, weldability, and salt stress corrosion resistance resistance to sea water are required as in deep diving underwater vehicles
T: Al-6 Mo-0.8 Cu-0.2 Ti-0.1						
T: Al-6 Mo-1 Cu-1.5 Fe-1.5				(V118) AMTU 451 453 (V13 1), TU1 R3.21 92.6 (T 31), OST 1 90000 90107 (V13 1), also (T3 11) for forgings		Jet engine discs and blades requiring extra creep resistance and stability
T: Al-6 Mo-1.5 Zn-2.1 Si-0.1 Bi-0.35						
T: Al-6 Mo-1 Zn-1.1 Si-0.15						
T: Al-6 Mo-2 Cu-2 Fe-1 Si-0.2						
T: Al-6 Mo-2 Si-2 Zn-2 Cu-2 Si-0.2						
T: Al-6 Mo-2 Si-2 Zn-4		PUG (UT6242), AIR (T AG2H4D)	LW 3 7144 K RUPP ILT24, CONTIMET (ALS92HM) 6.2.4.2)			Jet engine compressor parts (blades, discs, wheels, spacers), compressor case details, airframe skin components, good creep and tensile strength to 1050 F (566 C) Ultra high strength alloy, creep resistance up to 400 C
T: Al-6 Mo-4 Zn-5 Cu-1 Si-0.2	DTD M201 (IMI 700)					Gas turbine engine and air frame massive structure components for advanced jet engines
T: Al-6 Mo-6 Si-2 Zn-4		AIR (T AG6V6)			JIS H7152	
T: Al-6 V-0.5 Si-6 Zn-6 Fe-0.5 Cu-0.5				(V121L)		Liquid hydrogen tankage and airframe parts requiring high fracture toughness
T: Al-6 V-1 Mo-0.7 Zn-5 Cu-0.3 Si-0.2						
T: Al-6 V-4 ELI						

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US)		ASTM B348 74	ASTM (US)		MIL T 9047E	Military (US)	
				AMS Prelim	AMS Prelim		Other ASTM Specifications	Other ASTM Specifications		Other Military Specifications	Other Military Specifications
Ti-Al-6 V-4	(6-4) (BR/IMI 318) (USSR/IVT6) (FRIT A6V)	α+β	Appendix 4	4906 4911 4928 4935 4954 4965 4934 4967		Grade 5	B265 (Grade 5) B367 (Grade C 5) B381 (Grade F 5)		Competition 6	MIL F 83142 (Comp. 6) MIL R 81556 III (Comp. A) MIL T 9046 III (Comp. C) MIL T 81915 III (Comp. A) MIL T 069047 (Comp. G) MIL T 81556 III (Comp. A) MIL T 9046 III (Comp. H SPL) MIL T 46077	
Ti-Al-6 V-4 Co-3	(FRIT ARV4K3)										
Ti-Al-6 V-4 S-0.2	(USSR/IVT6L)	α+β									
Ti-Al-6 V-6 Sn-2	(6-6-2)	α+β		4918 4926 4971 4978 4979					Competition 8	MIL F 83142 (Comp. 8) MIL T 9046 III (Comp. E) MIL T 069047 (Comp. B) MIL T 81556 III (Comp. C)	
Ti-Al-6 V-6 Sn-2 Co-Fe-1	(FRIT 662ZR)	α+β									
Ti-Al-6 V-6 S-2 Zr-6	(USSR/OT4 2)	α+β									
Ti-Al-6 (Zr) 1.5 Mo 1.5 W-0.2 Zr	(BR/IMI 684)	α+β		AMS 10 (Ade- Nati Info)							
Ti-Al-6 Zr-5 S-0.3 W-1		α+β									
Ti-Al-6 (Co)-Fe-S-1.1 5	(USSR/IVT6)	α+β									
Ti-Al-6 S-Mo-3 S-0.25	(USSR/IVT8)	α+β									
Ti-Al-6 S-Mo-3 S-Sn-0.2 Zr-2 S-0.25	(USSR/IVT9L)	α+β									
Ti-Al-6 S-Mo-3 S-Sn-0.2 Zr-2 S-0.25	(USSR/IVT9)	α+β									
Ti-Al-6 S-V-1 Mo-1 Zr-2	(USSR/IVT20)	near α									
Ti-Al-7 Co-Ni-2 Ti-1		α									
Ti-Al-7 Mo-4	(7-4)	α+β		4970					Competition 9	MIL F 83142 (Comp. 9) MIL T 069047 (Comp. 9) MIL T 81556 III (Comp. D)	
Ti-Al-7 Zr-12		α									
Ti-Al-8 Co-Ni-2 Ti-1											

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FBI), A I C M, AFNOR, and NF	German Country Standards (IGY and GEI) DIN	Soviet Country Standards (URI), GOST	Other Standards		Applications
					Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish		
Ti-6Al-4V	BS 2710, 2711, 2712, 2713 2714, 2715, 2716, 2717 2718, 2719, 2720, 2721 2722, 2723, 2724, 2725 2726, 2727, 2728, 2729 2730, 2731, 2732, 2733 2734, 2735, 2736, 2737 2738, 2739, 2740, 2741 2742, 2743, 2744, 2745 2746, 2747, 2748, 2749 2750, 2751, 2752, 2753 2754, 2755, 2756, 2757 2758, 2759, 2760, 2761 2762, 2763, 2764, 2765 2766, 2767, 2768, 2769 2770, 2771, 2772, 2773 2774, 2775, 2776, 2777 2778, 2779, 2780, 2781 2782, 2783, 2784, 2785 2786, 2787, 2788, 2789 2790, 2791, 2792, 2793 2794, 2795, 2796, 2797 2798, 2799, 2800, 2801 2802, 2803, 2804, 2805 2806, 2807, 2808, 2809 2810, 2811, 2812, 2813 2814, 2815, 2816, 2817 2818, 2819, 2820, 2821 2822, 2823, 2824, 2825 2826, 2827, 2828, 2829 2830, 2831, 2832, 2833 2834, 2835, 2836, 2837 2838, 2839, 2840, 2841 2842, 2843, 2844, 2845 2846, 2847, 2848, 2849 2850, 2851, 2852, 2853 2854, 2855, 2856, 2857 2858, 2859, 2860, 2861 2862, 2863, 2864, 2865 2866, 2867, 2868, 2869 2870, 2871, 2872, 2873 2874, 2875, 2876, 2877 2878, 2879, 2880, 2881 2882, 2883, 2884, 2885 2886, 2887, 2888, 2889 2890, 2891, 2892, 2893 2894, 2895, 2896, 2897 2898, 2899, 2900, 2901 2902, 2903, 2904, 2905 2906, 2907, 2908, 2909 2910, 2911, 2912, 2913 2914, 2915, 2916, 2917 2918, 2919, 2920, 2921 2922, 2923, 2924, 2925 2926, 2927, 2928, 2929 2930, 2931, 2932, 2933 2934, 2935, 2936, 2937 2938, 2939, 2940, 2941 2942, 2943, 2944, 2945 2946, 2947, 2948, 2949 2950, 2951, 2952, 2953 2954, 2955, 2956, 2957 2958, 2959, 2960, 2961 2962, 2963, 2964, 2965 2966, 2967, 2968, 2969 2970, 2971, 2972, 2973 2974, 2975, 2976, 2977 2978, 2979, 2980, 2981 2982, 2983, 2984, 2985 2986, 2987, 2988, 2989 2990, 2991, 2992, 2993 2994, 2995, 2996, 2997 2998, 2999, 3000, 3001 3002, 3003, 3004, 3005 3006, 3007, 3008, 3009 3010, 3011, 3012, 3013 3014, 3015, 3016, 3017 3018, 3019, 3020, 3021 3022, 3023, 3024, 3025 3026, 3027, 3028, 3029 3030, 3031, 3032, 3033 3034, 3035, 3036, 3037 3038, 3039, 3040, 3041 3042, 3043, 3044, 3045 3046, 3047, 3048, 3049 3050, 3051, 3052, 3053 3054, 3055, 3056, 3057 3058, 3059, 3060, 3061 3062, 3063, 3064, 3065 3066, 3067, 3068, 3069 3070, 3071, 3072, 3073 3074, 3075, 3076, 3077 3078, 3079, 3080, 3081 3082, 3083, 3084, 3085 3086, 3087, 3088, 3089 3090, 3091, 3092, 3093 3094, 3095, 3096, 3097 3098, 3099, 3100, 3101 3102, 3103, 3104, 3105 3106, 3107, 3108, 3109 3110, 3111, 3112, 3113 3114, 3115, 3116, 3117 3118, 3119, 3120, 3121 3122, 3123, 3124, 3125 3126, 3127, 3128, 3129 3130, 3131, 3132, 3133 3134, 3135, 3136, 3137 3138, 3139, 3140, 3141 3142, 3143, 3144, 3145 3146, 3147, 3148, 3149 3150, 3151, 3152, 3153 3154, 3155, 3156, 3157 3158, 3159, 3160, 3161 3162, 3163, 3164, 3165 3166, 3167, 3168, 3169 3170, 3171, 3172, 3173 3174, 3175, 3176, 3177 3178, 3179, 3180, 3181 3182, 3183, 3184, 3185 3186, 3187, 3188, 3189 3190, 3191, 3192, 3193 3194, 3195, 3196, 3197 3198, 3199, 3200, 3201 3202, 3203, 3204, 3205 3206, 3207, 3208, 3209 3210, 3211, 3212, 3213 3214, 3215, 3216, 3217 3218, 3219, 3220, 3221 3222, 3223, 3224, 3225 3226, 3227, 3228, 3229 3230, 3231, 3232, 3233 3234, 3235, 3236, 3237 3238, 3239, 3240, 3241 3242, 3243, 3244, 3245 3246, 3247, 3248, 3249 3250, 3251, 3252, 3253 3254, 3255, 3256, 3257 3258, 3259, 3260, 3261 3262, 3263, 3264, 3265 3266, 3267, 3268, 3269 3270, 3271, 3272, 3273 3274, 3275, 3276, 3277 3278, 3279, 3280, 3281 3282, 3283, 3284, 3285 3286, 3287, 3288, 3289 3290, 3291, 3292, 3293 3294, 3295, 3296, 3297 3298, 3299, 3300, 3301 3302, 3303, 3304, 3305 3306, 3307, 3308, 3309 3310, 3311, 3312, 3313 3314, 3315, 3316, 3317 3318, 3319, 3320, 3321 3322, 3323, 3324, 3325 3326, 3327, 3328, 3329 3330, 3331, 3332, 3333 3334, 3335, 3336, 3337 3338, 3339, 3340, 3341 3342, 3343, 3344, 3345 3346, 3347, 3348, 3349 3350, 3351, 3352, 3353 3354, 3355, 3356, 3357 3358, 3359, 3360, 3361 3362, 3363, 3364, 3365 3366, 3367, 3368, 3369 3370, 3371, 3372, 3373 3374, 3375, 3376, 3377 3378, 3379, 3380, 3381 3382, 3383, 3384, 3385 3386, 3387, 3388, 3389 3390, 3391, 3392, 3393 3394, 3395, 3396, 3397 3398, 3399, 3400, 3401 3402, 3403, 3404, 3405 3406, 3407, 3408, 3409 3410, 3411, 3412, 3413 3414, 3415, 3416, 3417 3418, 3419, 3420, 3421 3422, 3423, 3424, 3425 3426, 3427, 3428, 3429 3430, 3431, 3432, 3433 3434, 3435, 3436, 3437 3438, 3439, 3440, 3441 3442, 3443, 3444, 3445 3446, 3447, 3448, 3449 3450, 3451, 3452, 3453 3454, 3455, 3456, 3457 3458, 3459, 3460, 3461 3462, 3463, 3464, 3465 3466, 3467, 3468, 3469 3470, 3471, 3472, 3473 3474, 3475, 3476, 3477 3478, 3479, 3480, 3481 3482, 3483, 3484, 3485 3486, 3487, 3488, 3489 3490, 3491, 3492, 3493 3494, 3495, 3496, 3497 3498, 3499, 3500, 3501 3502, 3503, 3504, 3505 3506, 3507, 3508, 3509 3510, 3511, 3512, 3513 3514, 3515, 3516, 3517 3518, 3519, 3520, 3521 3522, 3523, 3524, 3525 3526, 3527, 3528, 3529 3530, 3531, 3532, 3533 3534, 3535, 3536, 3537 3538, 3539, 3540, 3541 3542, 3543, 3544, 3545 3546, 3547, 3548, 3549 3550, 3551, 3552, 3553 3554, 3555, 3556, 3557 3558, 3559, 3560, 3561 3562, 3563, 3564, 3565 3566, 3567, 3568, 3569 3570, 3571, 3572, 3573 3574, 3575, 3576, 3577 3578, 3579, 3580, 3581 3582, 3583, 3584, 3585 3586, 3587, 3588, 3589 3590, 3591, 3592, 3593 3594, 3595, 3596, 3597 3598, 3599, 3600, 3601 3602, 3603, 3604, 3605 3606, 3607, 3608, 3609 3610, 3611, 3612, 3613 3614, 3615, 3616, 3617 3618, 3619, 3620, 3621 3622, 3623, 3624, 3625 3626, 3627, 3628, 3629 3630, 3631, 3632, 3633 3634, 3635, 3636, 3637 3638, 3639, 3640, 3641 3642, 3643, 3644, 3645 3646, 3647, 3648, 3649 3650, 3651, 3652, 3653 3654, 3655, 3656, 3657 3658, 3659, 3660, 3661 3662, 3663, 3664, 3665 3666, 3667, 3668, 3669 3670, 3671, 3672, 3673 3674, 3675, 3676, 3677 3678, 3679, 3680, 3681 3682, 3683, 3684, 3685 3686, 3687, 3688, 3689 3690, 3691, 3692, 3693 3694, 3695, 3696, 3697 3698, 3699, 3700, 3701 3702, 3703, 3704, 3705 3706, 3707, 3708, 3709 3710, 3711, 3712, 3713 3714, 3715, 3716, 3717 3718, 3719, 3720, 3721 3722, 3723, 3724, 3725 3726, 3727, 3728, 3729 3730, 3731, 3732, 3733 3734, 3735, 3736, 3737 3738, 3739, 3740, 3741 3742, 3743, 3744, 3745 3746, 3747, 3748, 3749 3750, 3751, 3752, 3753 3754, 3755, 3756, 3757 3758, 3759, 3760, 3761 3762, 3763, 3764, 3765 3766, 3767, 3768, 3769 3770, 3771, 3772, 3773 3774, 3775, 3776, 3777 3778, 3779, 3780, 3781 3782, 3783, 3784, 3785 3786, 3787, 3788, 3789 3790, 3791, 3792, 3793 3794, 3795, 3796, 3797 3798, 3799, 3800, 3801 3802, 3803, 3804, 3805 3806, 3807, 3808, 3809 3810, 3811, 3812, 3813 3814, 3815, 3816, 3817 3818, 3819, 3820, 3821 3822, 3823, 3824, 3825 3826, 3827, 3828, 3829 3830, 3831, 3832, 3833 3834, 3835, 3836, 3837 3838, 3839, 3840, 3841 3842, 3843, 3844, 3845 3846, 3847, 3848, 3849 3850, 3851, 3852, 3853 3854, 3855, 3856, 3857 3858, 3859, 3860, 3861 3862, 3863, 3864, 3865 3866, 3867, 3868, 3869 3870, 3871, 3872, 3873 3874, 3875, 3876, 3877 3878, 3879, 3880, 3881 3882, 3883, 3884, 3885 3886, 3887, 3888, 3889 3890, 3891, 3892, 3893 3894, 3895, 3896, 3897 3898, 3899, 3900, 3901 3902, 3903, 3904, 3905 3906, 3907, 3908, 3909 3910, 3911, 3912, 3913 3914, 3915, 3916, 3917 3918, 3919, 3920, 3921 3922, 3923, 3924, 3925 3926, 3927, 3928, 3929 3930, 3931, 3932, 3933 3934, 3935, 3936, 3937 3938, 3939, 3940, 3941 3942, 3943, 3944, 3945 3946, 3947, 3948, 3949 3950, 3951, 3952, 3953 3954, 3955, 3956, 3957 3958, 3959, 3960, 3961 3962, 3963, 3964, 3965 3966, 3967, 3968, 3969 3970, 3971, 3972, 3973 3974, 3975, 3976, 3977 3978, 3979, 3980, 3981 3982, 3983, 3984, 3985 3986, 3987, 3988, 3989 3990, 3991, 3992, 3993 3994, 3995, 3996, 3997 3998, 3999, 4000, 4001 4002, 4003, 4004, 4005 4006, 4007, 4008, 4009 4010, 4011, 4012, 4013 4014, 4015, 4016, 4017 4018, 4019, 4020, 4021 4022, 4023, 4024, 4025 4026, 4027, 4028, 4029 4030, 4031, 4032, 4033 4034, 4035, 4036, 4037 4038, 4039, 4040, 4041 4042, 4043, 4044, 4045 4046, 4047, 4048, 4049 4050, 4051, 4052, 4053 4054, 4055, 4056, 4057 4058, 4059, 4060, 4061 4062, 4063, 4064, 4065 4066, 4067, 4068, 4069 4070, 4071, 4072, 4073 4074, 4075, 4076, 4077 4078, 4079, 4080, 4081 4082, 4083, 4084, 4085 4086, 4087, 4088, 4089 4090, 4091, 4092, 4093 4094, 4095, 4096, 4097 4098, 4099, 4100, 4101 4102, 4103, 4104, 4105 4106, 4107, 4108, 4109 4110, 4111, 4112, 4113 4114, 4115, 4116, 4117 4118, 4119, 4120, 4121 4122, 4123, 4124, 4125 4126, 4127, 4128, 4129 4130, 4131, 4132, 4133 4134, 4135, 4136, 4137 4138, 4139, 4140, 4141 4142, 4143, 4144, 4145 4146, 4147, 4148, 4149 4150, 4151, 4152, 4153 4154, 4155, 4156, 4157 4158, 4159, 4160, 4161 4162, 4163, 4164, 4165 4166, 4167, 4168, 4169 4170, 4171, 4172, 4173 4174, 4175, 4176, 4177 4178, 4179, 4180, 4181 4182, 4183, 4184, 4185 4186, 4187, 4188, 4189 4190, 4191, 4192, 4193 4194, 4195, 4196, 4197 4198, 4199, 4200, 4201 4202, 4203, 4204, 4205 4206, 4207, 4208, 4209 4210, 4211, 4212, 4213 4214, 4215, 4216, 4217 4218, 4219, 4220, 4221 4222, 4223, 4224, 4225 4226, 4227, 4228, 4229 4230, 4231, 4232, 4233 4234, 4235, 4236, 4237 4238, 4239, 4240, 4241 4242, 4243, 4244, 4245 4246, 4247, 4248, 4249 4250, 4251, 4252, 4253 4254, 4255, 4256, 4257 4258, 4259, 4260, 4261 4262, 4263, 4264, 4265 4266, 4267, 4268, 4269 4270, 4271, 4272, 4273 4274, 4275, 4276, 4277 4278, 4279, 4280, 4281 4282, 4283, 4284, 4285 4286, 4287, 4288, 4289 4290, 4291, 4292, 4293 4294, 4295, 4296, 4297 4298, 4299, 4300, 4301 4302, 4303, 4304, 4305 4306, 4307, 4308, 4309 4310, 4311, 4312, 4313 4314, 4315, 4316, 4317 4318, 4319, 4320, 4321 4322, 4323, 4324, 4325 4326, 4327, 4328, 4329 4330, 4331, 4332, 4333 4334, 4335, 4336, 4337 4338, 4339, 4340, 4341 4342, 4343, 4344, 4345 4346, 4347, 4348, 4349 4350, 4351, 4352, 4353 4354, 4355, 4356, 4357 4358, 4359, 4360, 4361 4362, 4363, 4364, 4365 4366, 4367, 4368, 4369 4370, 4371, 4372, 4373 4374, 4375, 4376, 4377 4378, 4379, 4380, 4381 4382, 4383, 4384, 4385 4386, 4387, 4388, 4389 4390, 4391, 4392, 4393 4394, 4395, 4396, 4397 4398, 4399, 4400, 4401 4402, 4403, 4404, 4405 4406, 4407, 4408, 4409 4410, 4411, 4412, 4413 4414, 4415, 4416, 4417 4418, 4419, 4420, 4421 4422, 4423, 4424, 4425 4426, 4427, 4428, 4429 4430, 4431, 4432, 4433 4434, 4435, 4436, 4437 4438, 4439, 4440, 4441 4442, 4443, 4444, 4445 4446, 4447, 4448, 4449 4450, 4451, 4452, 4453 4454, 4455, 4456, 4457 4458, 4459, 4460, 4461 4462, 4463, 4464, 4465 4466, 4467, 4468, 4469 4470, 4471, 4472, 4473 4474, 4475, 4476, 4477 4478, 4479, 4480, 4481 4482, 4483, 4484, 4485 4486, 4487, 4488, 4489 4490, 4491, 4492, 4493 4494, 4495, 4496, 4497 4498, 4499, 4500, 4501 4502, 4503, 4504, 4505 4506, 4507, 4508, 4509 4510, 4511, 4512, 4513 4514, 4515, 4516, 4517 4518, 4519, 4520, 4521 4522, 4523, 4524, 4525 4526, 4527, 4528, 4529 4530, 4531, 4532, 4533 4534, 4535, 4536, 4537 4538, 4539, 4540, 4541 4542, 4543, 4544, 4545 4546, 4547, 4548, 4549 4550, 4551, 4552, 4553 4554, 4555, 4556, 4557 4558, 4559, 4560, 4561 4562, 4563, 4564, 4565 4566, 4567, 4568, 4569 4570, 4571, 4572, 4573 4574, 4575, 4576, 4577 4578, 4579, 4580, 4581 4582, 4583, 4584, 4585 4586, 4587, 4588, 4589 4590, 4591, 4592, 4593 4594, 4595, 4596, 4597 4598, 4599, 4600, 4601 4602, 4603, 4604, 4605 4606, 4607, 4608, 4609 4610, 4611, 4612, 4613 4614, 4615, 4616, 4617 4618, 4619, 4620, 4621 4622, 4623, 4624, 4625 4626, 4627, 4628, 4629 4630, 4631, 4632, 4633 4634, 4635, 4636, 4637 4638, 4639, 4640, 4641 4642, 4643, 4644, 4645 4646, 4647, 4648, 4649 4650, 4651, 4652, 4653 4654, 4655, 4656, 4657 4658, 4659, 4660, 4661 4662, 4663, 4664, 4665 4666, 4667, 4668, 4669 4670, 4671, 4672, 4673 4674, 4675, 4676, 4677 4678, 4679, 4680, 4681 4682, 4683, 4684, 4685 4686, 4687, 4688, 4689 4690, 4691, 4692, 4693 4694, 4695, 4696, 4697 4698, 4699, 4700, 4701 4702, 4703, 4704, 4705 4706, 4707, 4708, 4709 4710, 4711, 4712, 4713 4714, 4715, 4716, 4717 4718, 4719, 4720, 4721 4722, 4723, 4724, 4725 4726, 4727, 4728, 4729 4730, 4731, 4732, 4733 4734, 4735, 4736, 4737 4738, 4739, 4740, 4741						

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348-74	ASTM (US) Other ASTM Specifications	MIL T 9047E Composition 5	Military (US) Other Military Specifications
Ti-48 V 1 Mo 1	(B 1 1)	near α		4915, 4916, 4955, 4972, 4973				MIL F 83142 (Comp. 5) MIL T 9046, II (Comp. F) MIL T 81556, II (Comp. C) MIL T 009047 (Comp. 5)
Ti-48 V 1 Mo 1 Co 5								
Ti-48 Zr 18 Cu 1 Nb 1								
Ti-49 Sn 2 5								
Ti-49 Nb 45								
Ti-43 Fe 1 5								
Ti-42	(B R) (IMI 230)	α dispers		4982				
Ti-42 5	(B R) (IMI 230)	α dispers						
Ti-40 8	(B Mn)	$\alpha + \beta$		4008				
Ti-40 1 5 Zr 2 5								
Ti-40 2 Cr 2 Fe 2	(USSR) (ATZ)	$\alpha + \beta$		4923				
Ti-40 1 5		β						
Ti-40 1 5 Sn 4 5 Zr 6	(Beta III)	β	Appendix 4	4977, 4980	Grade 10	B265 (Grade 10) B338 (Grade 10) B337 (Grade 10)	Compositional	MIL F 83142 (Comp. 13) MIL T 9046, IV (Comp. B) MIL T 009047 (Comp. 13)
Ti-40 1 5	(B R) (IMI 205)	β						
Ti-40 32	(USSR) (4201)	β						
Ti-40 32 Cu Nb 1 5								
Ti-40 1 2	(USSR) (4203)	β						
Ti-40 5	(USSR) (4204)	α dispers						
Ti-40 1 5 0 20	(Pd alloy) (4200)	α						
					Grade 7 Grade 11	B265 (Grades 7 and 11) B337 (Grades 7 and 11) B338 (Grades 7 and 11) B367 (Grades C7A, C7B, C8A, and C8B) B381 (Grades 7 and 11)		

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (F.R.) A.T.C.M., A.F.NOR., and NF	German Country Standards (G.Y. and G.E.) DIN	Soviet Country Standards (U.R.) GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-0.1B V1 Mo1 C0.5	BS TA53.54.55.58.52 BS 2742.1.2TA22.2TA23.2TA24. DTD 5123.5133.5233 (IMI 230)	AIR (T AB0V) AEOMA T.P.66 PUG UTABDV	LW 3.7124 KRUPP (LT25) CONTINMET (ALMOV 8.1.1)		AWS A5.16 (ERTI-BAl-Mo IV)	Airframe and turbine engine applications requiring short time strength, long time creep resistance stability, and stiffness; parts requiring high strength to 850 F (454 C); good creep and toughness properties; good weldability.
Ti-0.2	BS TA53.54.55.58.52 BS 2742.1.2TA22.2TA23.2TA24. DTD 5123.5133.5233 (IMI 230)	AIR (T U2) AEOMA T.P.11 PUG (UTC)	LW 3.7124 (draft) KRUPP (LT25) CONTINMET (CUZ) FUCHS (TC 2)			For jet engine components, corrosion and heat resistant
Ti-0.2.5	BS TA53.54.55.58.52 BS 2742.1.2TA22.2TA23.2TA24 DTD 5123.5133.5233.5243.5253 5263 (IMI 230)	AIR (T U2) AEOMA T.P.11 PUG (UTC)	LW 3.7124 (draft) KRUPP (LT25) CONTINMET (CUZ) FUCHS (IC 2)			For the chemical industry, good weldability and ductility, formable, corrosion resistant, for high temperature applications, corrosion resistant parts, good strength retained up to 570 F (300 C).
Ti-Mn-8				(AT2)		Aircraft sheet components, structural sections, and skins, good formability, moderate strength, for aircraft and jet engine components, heat resistant, low density
Ti-Mo 1.5 Zr 2.5						Good cold formability
Ti-Mo2 Cu2 Fe2		PUG (UTD22RE) AIR (TD122RE)				
Ti-Mo 11.5						
Ti-Mo 11.5 Sn 4.5 Zr 6						
Ti-Mo 15	(IMI 205)					
Ti-Mo 32						
Ti-Mo 32 Co/Nb 1.5						
Ti-Ni 1.2						
Ti-Ta5						
Ti-Pd 15-0.20	BS 3003 part 9 TP1 BS 2741 (IMI 260)	PUG (UT35.02)	DIN 3.7070.3.7066.3.7040.3.7030. KRUPP RT12PD RT15PD RT18PD. RT20PD CONTINMET IPD 02.30.02.35.02.35D) FUCHS (TP02)	(4201) (4203) (4204) (4200)		Parts requiring formability and corrosion resistance, high-strength fasteners, high-strength aircraft sheet parts, high temperature applications.
					AWS A5.16 (ERTI 0.2Pd)	Chemical industry applications where environments are moderately reducing or fluctuate between oxidizing and reducing.

TABLE 1E. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR US TITANIUM ALLOYS OF COMMERCIAL INTEREST (Arranged by Alloy Type)⁽⁵⁷⁾

Nominal Composition Wt %	Alloy Type	Common Name(*A)	Ctry Code
Ti-unalloyed-99.5(*B)	α	(CP)	US
Ti-unalloyed-99.2(*B)	α	(CP)	US
Ti-unalloyed-99.0(*B)	α	(CP)	US
Ti-Pd0.15-0.20	α	(Pd alloy)	US
Ti-Al5-Sn2.5(*C)	α	(A-110)	US
Ti-Ni1-2(*D)	α dispers.		US
Ti-Cu2	α dispers.	(IMI-230)	US
Ti-Al2.5-Mo1-Sn 11-Zr5-Si0.2	near- α	(679)	US
Ti-Al5-Mo1-Sn6-Zr2-Si0.25(*E)	near- α	(5621S)	US
Ti-Al6-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1	near- α	(Ti-11)	US
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	near- α	(6-2-1-1)	US
Ti-Al8-V1-Mo1	near- α	(8-1-1)	US
Ti-Mn8	$\alpha+\beta$	(8Mn)	US
Ti-Al3-V2.5	$\alpha+\beta$	(3-2.5)	US
Ti-Al4-V1-Mo3	$\alpha+\beta$	(4-3-1)	US
Ti-Al5-Mo4-Sn2-Zr2-Cr4	$\alpha+\beta$	(Ti-17)	US
Ti-Al6-V4(*C)	$\alpha+\beta$	(6-4)	US
Ti-Al6-V6-Sn2	$\alpha+\beta$	(6-6-2)	US
Ti-Al6-Mo2-Sn2-Zr4(*F)	$\alpha+\beta$	(6-2-4-2)	US
Ti-Al6-Mo6-Sn2-Zr4	$\alpha+\beta$	(6-2-4-6)	US
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2	$\alpha+\beta$	(6-2-2-2-2)	US
Ti-Al7-Mo4	$\alpha+\beta$	(7-4)	US
Ti-Al1-V8-Fe5	near- β	(185)	US
Ti-Al2-V 11-Sn2-Zr 11	β	(Transage 129)	US
Ti-Al3-V8-Mo4-Zr4-Cr6	β	(beta C)	US
Ti-Mo 11.5-Sn4.5-Zr6	β	(beta III)	US
Ti-Al3-V8-Mo8-Fe2	β	(8-8-2-3)	US
Ti-Al3-V 13-Cr 11	β	(13-11-3)	US

(*A) Producer nomenclature varies since some companies use a code for designating products while others use logical symbols such as the company name followed by the composition in alphanumeric form. See Table 1E.1 for guidance.

(*B) Several grades of unalloyed titanium are produced which differ in impurity level, hence strength and ductility.

(*C) High-purity grades of these alloys are available and are designated with the suffix ELI, meaning extra low interstitials.

(*D) A new titanium alloy containing nickel, Ti-0.3Mo-0.8Ni, intended to be substituted for Ti-0.2Pd alloy in selected applications, was announced in October 1974.

(*E) A modification of this alloy, Ti-5Al-5Sn-2Zr-2Mo-0.25Si, may become commercial.

(*F) A silicon-containing grade of 6-2-4-2 is also available.

TABLE 1E.1. CORRELATION OF TYPICAL US TITANIUM ALLOY DESIGNATIONS BY US PRODUCING COMPANIES⁽⁵⁷⁾

Nominal Composition	Wt %	Crucible(*A)	Martin(*B)	RM(*C)	Time(*D)	Other
Ti-unalloyed-99.5	A-40		MMA-1940	RMI 40	Ti-35A	ARMCO Ti-40(*E)
Ti-unalloyed-99.2	A-55		MMA-1950	RMI 55	Ti-65A	
Ti-unalloyed-99.0	A-70		MMA-1970	RMI 70	Ti-75A	
Ti-Pd0.15-0.20			MMA-1942	RMI 0.2Pd	Ti-0.20Pd	TITECH 0.2(*F)
Ti-Al5-Sn2.5	A-110AT		MMA-5137	RMI 5Al-2.5Sn	Ti-5Al-2.5Sn	
Ti-Ni1-2					Ti-Ni2	
Ti-Cu2				RMI 2Cu		
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2					Ti-679	
Ti-Al5-Mo1-Sn6-Zr2-Si0.25				RMI 5Al-6Sn-2Zr-1Mo-Si		
Ti-Al6-Mo1-Zr1.5-Bi0.35-Si0.1					Ti-11	
Ti-Al6-Mo0.8-Cb/Nb2-Ta1						
Ti-Al8-V1-Mo1	8Al-1Mo-1V		MMA-8116	RMI 6Al-2Cb-1Ta-1Mo	Ti-8Al-1Mo-1V	
Ti-Mn8	C-110M			RMI 8Mn	Ti-8Mn	
Ti-Al3-V2.5	3Al-2.5V		MMA-3138	RMI 3Al-2.5V	Ti-3Al-2.5V	
Ti-Al4-V1-Mo3				RMI 4Al-3Mo-1V		
Ti-Al5-Mo4-Sn2-Zr2-Cr4					Ti-17	TEL-Ti-6Al-4V(*G)
Ti-Al6-V4	C-120AV		MMA-6510	RMI 6Al-4V	Ti-6Al-4V	
Ti-Al6-V6-Sn2	C-125AVT		MMA-5158	RMI 6Al-6V-2Sn	Ti-6Al-6V-2Sn	
Ti-Al6-Mo2-Sn2-Zr4	6Al-2Sn-4Zr-2Mo		MMA-9744	RMI 6Al-2Sn-4Zr-2Mo	Ti-6Al-2Sn-4Zr-2Mo	
Ti-Al6-Mo6-Sn2-Zr4			MMA-6246	RMI 6Al-2Sn-4Zr-6Mo	Ti-6Al-2Sn-4Zr-6Mo	
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2				RMI 6222S		
Ti-Al7-Mo4			MMA-7146	RMI 7Al-4Mo	Ti-7Al-4Mo	
Ti-Al1-V8-Fe5				RMI 1Al-8V-5Fe		Transage 129, experiment ALLVAC Ti-3-8-6-4-4(*H)
Ti-Al2-V 11-Sn2-Zr 11				RMI 38-6-44		
Ti-Al3-V8-Mo4-Zr4-Cr6	beta III					
Ti-Mo 11.5-Sn4.5-Zr6						
Ti-Al3-V8-Mo8-Fe2						
Ti-Al3-V 13-Cr 11	B-120VCA			RMI 13V-11Cr-3Al	Ti-8Mo-8V-2Fe-3Al Ti-13V-11Cr-3Al	OMC-VCA(*I)

Nomenclature note: The company name may precede the alloy composition (OR), the company name (Symbol) may precede the alloy composition. Sometime alloy designations are entirely in symbols.

TABLE 1E.1. (Continued)

- (*A) Crucible, Inc., subsidiary of Colt Industries.
- (*B) Martin Marietta Aluminum, Titanium Division.
- (*C) RMI Company (formerly Reactive Metals, Inc.).
- (*D) Timet Division, Titanium Metals Corporation of America (TMCA).
- (*E) ARMCO Steel Corporation, Advanced Materials Division (ARMCO).
- (*F) TITECH International, Inc. (TITECH).
- (*G) Teledyne Titanium, Inc. (Teledyne Ti).
- (*H) Teledyne ALLVAC (ALLVAC).
- (*I) Oregon Metallurgical Corporation (OREMET).

The companies providing the high-purity grades of Ti-5Al-2.5Sn and Ti-6Al-4V alloys (and sometimes others) designate such grades with the suffix ELI, meaning extra low interstitials.

TABLE 1E.2. TYPICAL TITANIUM ALLOY DESIGNATIONS AND COMPOSITIONS OF MATERIALS DESCRIBED IN AMERICAN WELDING SOCIETY SPECIFICATION AWS A5.16-70 FOR TITANIUM AND TITANIUM ALLOY BARE WELDING RODS AND ELECTRODES^(45,57)

Nominal Composition, Wt %	AWS Classification	Interstitial and Iron Contents, Weight Percent(*A)				
		C	O	H	N	Fe
Ti-unalloyed(*B)	ERTI-1	0.03	0.10	0.005	0.012	0.10
Ti-unalloyed	ERTI-2	0.05	0.10	0.008	0.020	0.20
Ti-unalloyed	ERTI-3	0.05	0.10-0.15	0.008	0.020	0.20
Ti-unalloyed	ERTI-4	0.05	0.15-0.25	0.008	0.020	0.30
Ti-Pd0.15-0.25	ERTI-0.2Pd	0.05	0.15	0.008	0.020	0.25
Ti-Al3-V2.5	ERTI-3Al-2.5V	0.05	0.12	0.008	0.020	0.25
Ti-Al3-V2.5(*B)	ERTI-3Al-2.5V-1	0.04	0.10	0.005	0.012	0.25
Ti-Al5-Sn2.5	ERTI-5Al-2.5Sn	0.05	0.12	0.008	0.030	0.40
Ti-Al5-Sn2.5(*B)	ERTI-5Al-2.5Sn-1	0.04	0.10	0.005	0.012	0.25
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	ERTI-6Al-2Cb-1Ta-1Mo	0.04	0.10	0.005	0.012	0.15
Ti-Al6-V4	ERTI-6Al-4V	0.05	0.15	0.008	0.020	0.25
Ti-Al6-V4(*B)	ERTI-6Al-4V-1	0.04	0.10	0.005	0.012	0.15
Ti-Al8-V1-Mo1.8	ERTI-8Al-1Mo-1V	0.05	0.12	0.008	0.03	0.25
Ti-Al3-V 13-Cr 11	ERTI-13V-11Cr-3Al	0.05	0.12	0.008	0.03	0.25

(*A) Analyses to meet interstitial content requirements are made after the welding rod or electrode is reduced to the final diameter. Single values are maximum values allowed.

(*B) Very high purity compositions.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.1. TYPICAL TITANIUM ALLOYS OFFERED BY THE IMPERIAL METAL INDUSTRIES LTD. OF THE UNITED KINGDOM (Arranged by IMI Alloy Designation Numbers)^(6,7,57)

Nominal Composition Wt %	Alloy Type	IMI Alloy Designation	Common Name	Typical Product(*A) Forms	Ctry Code
Titanium	α	IMI-125	(CP)	BI,BA,W,P,SH	UK
Unalloyed	α	IMI-130	(CP)	BI,BA,W,SH	UK
Grades(*B)	α	IMI-155	(CP)	SH	UK
(IMI-125 to IMI-160)	α	IMI-160	(CP)	BI,BA,W	UK
Ti-Pd0.15-0.20	α	IMI-115	(Pd Alloy)	SH,ST	UK
Ti-Pd0.15-0.20	α	IMI-260	(Pd Alloy)	SH,ST	UK
Ti-Mo 15(*C)	β	IMI-205			UK
Ti-Cu2.5	α dispers.	IMI-230		BI,BA,W,P,SH	UK
Ti-Al4-Mn4	$\alpha+\beta$	IMI-314			UK
Ti-Al2-Mn2	$\alpha+\beta$	IMI-315		BA	UK
Ti-Al5-Sn2.5(*D)	α	IMI-317	(A-110)		UK
Ti-Al5-Sn2.5(*D)	α	IMI-317ELI	(A-110)ELI		UK
Ti-Al6-V4	$\alpha+\beta$	IMI-318	(6-4)	BI,BA	UK
Ti-Al6-V4 ELI	$\alpha+\beta$	IMI-318ELI	(6-4)ELI	BI,BA	UK
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$ (*E)	IMI-550		BI,BA	UK
Ti-Al4-Mo4-Sn4-Si0.5	$\alpha+\beta$ (*E)	IMI-551		BI,BA	UK
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2	near- α (*E)	IMI-679	(679)	BI,BA	UK
Ti-Al2.25-Mo4-Sn 11-Si0.25	$\alpha+\beta$ (*E)	IMI-680		BI,BA	UK
Ti-Al6-Zr5-W1-Si0.2(*D)	$\alpha+\beta$ (*E)	IMI-684			UK
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$ (*E)	IMI-685		BI,BA	UK
Ti-Al6-Mo4-Zr5-Cu1-Si0.2(*D)	$\alpha+\beta$ (*E)	IMI-700			UK

(*A) BI=BILLET, BA=BAR, W=WIRE, P=PLATE, SH-SHEET.

(*B) The lower the number, the higher the purity.

(*C) The Ti-15Mo beta titanium alloy, IMI-205, and the Ti-4Al-4Mn alloy, IMI-314, are no longer offered.

(*D) Alloys not produced on a regular schedule but available upon special request.

(*E) These alloys also are known as alpha-dispersoid types.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.2. TYPICAL TITANIUM ALLOYS OFFERED BY FRANCE

(Arranged by National Titanium Alloy Designations, the Pechiney-Ugine-Kuhlman (PUG) Alloy Numbers, AIR Standard Numbers and AECMA Standard Numbers)(7,11,18,21,57)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
<u>AECMA</u>					
Ti-unalloyed-99.8,CP,- ksi YS	α	Ti P.01	IMI-115,CP	All forms	EU
Ti-unalloyed-99.7,CP,- ksi YS	α	Ti P.02	IMI-125,CP	All forms	EU
Ti-unalloyed-99.5,CP,-40 ksi YS	α	Ti P.04	IMI-155,CP	All forms	EU
Ti-unalloyed-99. ,CP,- ksi YS	α	Ti P.05	IMI-130,CP	All forms	EU
Ti-Cu2	α dispers.	Ti P.11	(IMI-230)	BA,SH,P,FG,W	EU
Ti-Al4-Mn4	$\alpha+\beta$	Ti P.62	(IMI-314)		EU
Ti-Al6-V4	$\alpha+\beta$	Ti P.63	(IMI-318)		EU
Ti-Al6-V6-Sn2	$\alpha+\beta$	Ti P.64	(6-6-2)		EU
Ti-Al5-Sn2.5	α	Ti P.65	(IMI 317)		EU
Ti-Al8-V1-Mo1	near- α	Ti P.66	(8-1-1)		EU
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$	Ti P.67	(IMI-685)		EU
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$	Ti P.68	(IMI-550)		EU
<u>AIR Norms</u>					
Ti-unalloyed-99. ,CP,-35 ksi YS	α	9182;T-35	(IMI-115)	All forms	FR
Ti-unalloyed-99.5,CP,-40 ksi YS	α	9182;T-40	(IMI-125)	All forms	FR
Ti-unalloyed-99. ,CP,-50 ksi YS	α	9182;T-50	(IMI-130)	All forms	FR
Ti-unalloyed-99. ,CP,-60 ksi YS	α	9182;T-60	(IMI-160)	All forms	FR
Ti-Al4-Mn4	$\alpha+\beta$	9183;T-A4M	(IMI-314)		FR
Ti-Al6-V4	$\alpha+\beta$	9183;T-A6V	(IMI-318)		FR
Ti-Al4-Mn4	$\alpha+\beta$	9184;T-A4M	(IMI-314)		FR
Ti-Al6-V4	$\alpha+\beta$	9184;T-A6V	(IMI-318)		FR
Ti-Pd0.15--0.20	α	T-35-02	(IMI-260)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	T-U2	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	T-C	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Al3-V2.5	$\alpha+\beta$	T-A3V	(3-2.5)	BA,SH,P,FG	FR
Ti-Al3-V2.5	$\alpha+\beta$	T-3V2.5	(3-2.5)	BA,SH,P,FG	FR
Ti-Al3-V8-Mo4-Zr4-Cr6	β	T-D8C6DZRA	(beta C)		FR
Ti-Al3-V 13-Cr 11	β	T-V13CA	(13-11-3)		FR
Ti-Al4-V1-Mo3	$\alpha+\beta$	T-A4D3V	(4-3-1)		FR
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$	T-A4DE	(IMI-550)		FR
Ti-Al5-Sn2.5	α	T-A5E	(A-110)	BA,SH,P,FG	FR
Ti-Al5-Mo4-Sn2-Zr2-Cr4	$\alpha+\beta$	Ti-17	(Ti-17)		FR
Ti-Al6-V4	$\alpha+\beta$	T-A6V	(6-4)	BA,SH,P,FG	FR
Ti-Al6-V4-Co3	$\alpha+\beta$	T-A6V4K3	(6-4-3)		FR
Ti-Al6-V6-Sn2	$\alpha+\beta$	T-A6V6E2	(6-6-2)	BA,SH,P,FG	FR

TABLE 1F.2. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Al6-V6-Sn2-Cu0.5-Fe0.5	$\alpha+\beta$	T-A6V6E2	(6-6-2)	BA,SH,P,FG	FR
Ti-Al6-V6-Sn2-Zr6-Cu0.5-Fe0.5	$\alpha+\beta$	T-A6V6E2Zr	(6-6-2)+Zr	BA,SH,P,FG	FR
Ti-Al6-Mo6-Sn2-Zr4	$\alpha+\beta$	Ti-6246	(6-2-4-6)	BA,SH,P,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$	T-A6Zr5D			FR
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	T-A6Zr4DE	(6-2-4-2)	BA,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$	T-A6ZD			FR
Ti-Al6-Zr5-W1-Si0.2	$\alpha+\beta$	T-A6AZ5W			FR
Ti-Al7-Mo4	$\alpha+\beta$	T-A7D	(7-4)	BA,FG	FR
Ti-Al8-V1-Mo1	near- α	T-A8DV	(8-1-1)	BA,FG	FR
<u>PUG</u>					
Ti-unalloyed-99. ,CP,-35 ksi YS	α	UT35		BA,SH,P,FG,W	FR
Ti-unalloyed-99. ,CP,-40 ksi YS	α	UT40		BA,SH,P,FG,W	FR
Ti-unalloyed-99. ,CP,- ksi YS	α	UT60	(CP)	BA,SH,P,FG,W	FR
Ti-Pd0.15--0.20	α	UT35-02	(RD alloy)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	UTC	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Al5-Sn2.5	α	UTA5E	(A-110)	BA,SH,P,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.25	$\alpha+\beta$	UT685	(IMI-685)	BA,FG	FR
Ti-Al8-V1-Mo1	α	UTA8DV	(8-1-1)	BA,FG	FR
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	UT6242	(6-2-4-2)	BA,FG	FR
Ti-Al3-V2.5	$\alpha+\beta$	UTA3V	(3-2.5)	BA,SH,P,FG	FR
Ti-Al6-V4	$\alpha+\beta$	UTA6V	(6-4)	BA,SH,P,FG	FR
Ti-Al6-V6-Sn2	$\alpha+\beta$	UT662	(6-6-2)	BA,SH,P,FG	FR
Ti-Al7-Mo7	$\alpha+\beta$	UTA7D	(7-4)	BA,FG	FR
Ti-Al6-Mo1-Sn2-Zr5-Si0.25		UT651A	develop.	BA,FG	FR
Ti-Mo 11.5-Sn4.5-Zr6	β	TD12ZRE	develop.	BA,FG	FR
Ti-unalloyed-99. ,CP,-50 ksi YS	α	UT50	(CP)	BA,SH,P,FG,W	FR
Ti-Al5-Sn2.5	α	UTA5E"L"	(A-110)"L"	BA,SH,P,FG	FR
Ti-unalloyed-99. ,CP,-40 ksi YS	α	UT40R	(CP)	wire/rivets, aerospace	FR
Ti-Al6-V6-Sn2-Zr6	$\alpha+\beta$	UTA6V6E2Zr	develop.		FR

Note:

AECMA=Association Europeene Constructeur de Material Aerospacial
(Association of European Airframe Manufacturers, Paris, France)

AIR=Des Reglements AIR (Regulations AIR), Paris, France

PUG=Pechiney-Ugine-Kuhlman (Group), Paris, France

Forms available: BA=BAR, SH=SHEET, P=PLATE, FG=FORGING, W=WIRE

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.3. TYPICAL TITANIUM ALLOYS OFFERED BY WEST GERMANY

(Arranged by Krupp Contimet, Fuchs, and Vereinigte Deutsche Metallwerke AG Alloy Numbers and by LW, DIN and VdTUV Numbers)^(7,18,21,25,26)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
LW(*B) LN or BW3 WERKSTOFF					
Ti-unalloyed-99.6,CP,-25 ksi YS	a	LW 3.7024	CP, gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	a	LW 3.7034	CP, gr. 2	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	a	LW 3.7064	CP, gr. 4	All forms	GY
Ti-Al5-Sn2.5	a	LW 3.7114	(A-110)		GY
Ti-Cu2	a	LW 3.7124	(IMI-230)	BA,SH,ST,P,W,FG,T	GY
Ti-Al8-V1-Mo1	near-a	LW 3.7134	(8-1-1)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-Mo2-Sn2-Zr4	a+β	LW 3.7144	(6-2-4-2)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-Mo0.5-Zr5-Si0.25	a+β	LW 3.7154	(IMI-685)		GY
Ti-Al6-V4	a+β	LW 3.7164	(6-4)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-V6-Sn2	a+β	LW 3.7174	(6-6-2)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al4-Mo4-Sn2-Si0.5	a+β	LW 3.7184	(IMI-550)	BA,SH,ST,P,FG	GY
DIN(*D) WERKSTOFF					
Ti-unalloyed-99.6,CP,-25 ksi YS	a	DIN 3.7025	CP,IMI-115	All forms	GY
Ti-Pd0.15-0.25	a	DIN 3.7030	(Pd alloy)	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	a	DIN 3.7035	CP,IMI-125	All forms	GY
Ti-Pd0.15-0.25	a	DIN 3.7040	(Pd alloy)	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	a	DIN 3.7055	CP,IMI-130	All forms	GY
Ti-Pd0.15-0.25	a	DIN 3.7056	(Pd alloy)	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	a	DIN 3.7065	CP,IMI-155	All forms	GY
Ti-Pd0.15-0.25	a	DIN 3.7070	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	a	DIN 3.7115	(A-110)	All forms	GY
Ti-Al6-V4	a+β	DIN 3.7165	(6-4)	All forms	GY
VdTUV(*E) 230-1-68 WERKSTOFF					
Ti-unalloyed-99.6,CP,-25 ksi YS	a	Grade I	ASTM-gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	a	Grade II	ASTM-gr. 2	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	a	Grade III	ASTM-gr. 3	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	a	Grade IV	ASTM-gr. 4	All forms	GY

TABLE 1F.3. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
DIN(*C)					
Form					
Standards					
Ti-unalloyed-99.+,CP	α	DIN 17850	CP,all gr.	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	DIN 17851	(6-4)	SH,ST	GY
Ti-Al5-Sn2.5	α	DIN 17851	(A-110)	SH,ST,P	GY
Ti-unalloyed-99.+,CP	α	DIN 17860	CP,all gr.	SH,ST annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17862	CP,all gr.	BA annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17863	CP,all gr.	W annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17864	CP,all gr.	FG annealed	GY
Krupp(*F)					
Tikrutan					
Brand					
Ti-unalloyed-99.6,CP,-25 ksi YS	α	RT12	CP, gr. 1	All forms	GY
Ti-Pd0.15-0.25	α	RT12 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	RT15	CP, gr. 2	All forms	GY
Ti-Pd0.15-0.25	α	RT15 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	RT18	CP, gr. 3	All forms	GY
Ti-Pd0.15-0.25	α	RT18 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	RT20	CP, gr. 4	All forms	GY
Ti-Pd0.15-0.25	α	RT20 Pd	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	α	LT21	(A-110)	All forms	GY
Ti-Al8-V1-Mo1	near- α	LT22	(8-1-1)	All forms	GY
Ti-Al5-Sn5-Zr5	α	LT23		All forms	GY
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	LT24	(6-2-4-2)	All forms	GY
Ti-Cu2	α dispers.	LT25	(IMI-230)	All forms	GY
Ti-Al6-Mo0.8-Zr5-Si0.3	$\alpha+\beta$	LT26	(IMI-685)	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	LT31	(6-4)	All forms	GY
Ti-Al7-Mo4	$\alpha+\beta$	LT32	(7-4)	All forms	GY
Ti-Al6-V6-Sn2	$\alpha+\beta$	LT33	(6-6-2)	All forms	GY
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$	LT34	(IMI-550)	All forms	GY
Ti-Al3-V 13-Cr 11	β	LT41	(13-11-3)	All forms	GY
Thyssen(*G)					
Contimet					
Brand					
Ti-unalloyed-99.6,CP,-25 ksi YS	α	30	CP, gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	35	CP, gr. 2	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	35D	CP, gr. 3	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	55	CP, gr. 4	All forms	GY

TABLE 1F.3. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Pd-0.15--0.25	<i>a</i>	Pd 02/30	(Pd alloy)	All forms	GY
Ti-Pd0.15--0.25	<i>a</i>	Pd 02/35	(Pd alloy)	All forms	GY
Ti-Pd-0.15--0.25	<i>a</i>	Pd 02/35D	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	<i>a</i>	AlSn 52	(A-110)	All forms	GY
Ti-Al5-Sn2.5 ELI	<i>a</i>	AlSn 52 ELI	(A-110)ELI	All forms	GY
Ti-Cu2	<i>a</i> dispers.	Cu 2	(IMI-230)	All forms	GY
Ti-Al6-V4	<i>a</i> + <i>β</i>	AIV 64	(6-4)	All forms	GY
Ti-Al6-V4 ELI	<i>a</i> + <i>β</i>	AIV 64 ELI	(6-4)ELI	All forms	GY
Ti-Al8-V1-Mo1	near- <i>a</i>	AlMoV 8-1-1	(8-1-1)	All forms	GY
Ti-Al6-Mo0.5-Zr5	<i>a</i> + <i>β</i>	685	(IMI-685)	All forms	GY
Ti-Al6-Mo2-Sn2-Zr4	<i>a</i> + <i>β</i>	AlSnZrMo 6-2-4-2	(6-2-4-2)	All forms	GY
Ti-Al6-V2-Sn2	<i>a</i> + <i>β</i>	AIVSn 6-6-2	(6-6-2)	All forms	GY
Ti-Al4-Mo4-Sn2	<i>a</i> + <i>β</i>	AlMoSn 442	(4-4-2)	All forms	GY
Otto Fuchs(*H)					
Brand					
Ti-unalloyed-99.6,CP,-25 ksi YS	<i>a</i>	T2	CP, gr. 1	Forgings	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	<i>a</i>	T3	CP, gr. 2	Forgings	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	<i>a</i>	T6	CP, gr. 3	Forgings	GY
Ti-Al4-Mo4-Sn2	<i>a</i> + <i>β</i>	Ta44		Forgings	GY
Ti-Al5-Sn2.5	<i>a</i>	Ta52	(A-110)	Forgings	GY
Ti-Al6-V4	<i>a</i> + <i>β</i>	Ta64	(6-4)	Forgings	GY
Ti-Al6-V6-Sn2	<i>a</i> + <i>β</i>	Ta66	(6-6-2)	Forgings	GY
Ti-Al7-Mo4	<i>a</i> + <i>β</i>	Ta74	(7-4)	Forgings	GY
Ti-Cu2	<i>a</i>	TC2	(IMI-230)	Forgings	GY
Ti-Pd0.15--0.20	<i>a</i> dispers.	TP02	(Pd alloy)	Forgings	GY
Vereinigte(*I)					
Metallwerke AG					
Brand					
Ti-unalloyed-99.6,CP,-25 ksi YS	<i>a</i>	Ti995	(CP)	Forgings	GY
Ti-unalloyed-99.4,CP,-40 ksi YS	<i>a</i>	Ti994	(CP)	Forgings	GY
Ti-unalloyed-99.3,CP,-55 ksi YS	<i>a</i>	Ti993	(CP)	Forgings	GY
Ti-unalloyed-99.2,CP,- ksi YS	<i>a</i>	Ti992	(CP)	Forgings	GY

(*A) B=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE, FG=FORGINGS, T=TUBE, E=EXTRUSION.

(*B) LW= Luftfahrt Werkstoff Number, also referred to as Aircraft Material and Aircraft Industry. The British list these alloys as BWB Numbers (Bundesamt für Wehrtechnik) und Beschaffung (BWB), Koblenz, West Germany.

(*C) DIN=Deutsche Normen (German Standards) (General form and composition specifications).

(*D) DIN=Deutsche Norman Werkstoffe Numbers. These materials or alloys numbers are subdivisions of the general DIN specifications for wrought titanium alloys, and are issued by Deutscher Normenausschuss, Berlin/Köln, West Germany. The DIN Werkstoff Numbers 3.7030, 3.7040, 3.7056, and 3.7070 are proposed specifications.

(*E) VdTUV=Vereinigung der Technischen Überwachungsverein Ev (German Association for Technical Supervision), Essen, West Germany.

TABLE 1F.3. (Continued)

- (*F) Fried, Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, West Germany.
- (*G) Thyssen Edelstahlwerk AG, Titanium Division, Krefeld, West Germany.
- (*H) Otto Fuchs Metallwerke, Meinerzhagen, West Germany.
- (*I) Vereinigte Deutsche Metallwerke AG.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.4. TYPICAL TITANIUM ALLOYS OFFERED IN THE TECHSNABEXPORT BROCHURE FROM THE SOVIET UNION AS WELL AS ALLOYS SHOWN IN THE 1975 BOOK "USE OF TITANIUM IN THE NATIONAL ECONOMY" (Arranged by Soviet Alloy Designation Numbers)^(50,87,88)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Titanium	α	VT1-00	(CP)	All forms	UR
Unalloyed	α	VT1-0	(CP)	All forms	UR
Grades(*D)	α	VT1	(CP)	All forms	UR
	α	VT1-1	(CP)	All forms	UR
(VT1 and suffixes)	α	VT1L	(CP)	Unalloyed Ti/castings	UR
Ti-Al4-Mn1.5	$\alpha+\beta$	VT4		I,BI,BA,SH,T	UR
Ti-Al5	α	VT5		I,BI,BA,E	UR
Ti-Al5-Si0.5	α dispers.	VT5L		I,C	UR
Ti-Al5-Sn2.5	α	VT5-1	(A-110)	I,BI,BA,P,SH,E,T	UR
Ti-Al6-V4	$\alpha+\beta$	VT6	(6-4)	I,BI,BA,SH,E,T	UR
Ti-Al6-V4-Si0.2	$\alpha+\beta$	VT6L		I,C	UR
Ti-Al4.5-V3.5	$\alpha+\beta$	VT6S		I,BI,BA,P,SH,T,C	UR
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	$\alpha+\beta$	VT3-1		I,BI,BA,E,T	UR
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	$\alpha+\beta$	VT3-1L		I,C	UR
Ti-Al6.5-Mo3.5-Si0.25	$\alpha+\beta$	VT8		I,BI,BA,E	UR
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	$\alpha+\beta$	VT9		I,BI,BA	UR
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	$\alpha+\beta$	VT9L		I,C	UR
Ti-Al4-V1-Mo3	$\alpha+\beta$	VT14		I,BI,BA,P,SH,E,T	UR
Ti-Al4-V1-Mo3-Si0.2	$\alpha+\beta$	VT14L		I,C	UR
Ti-Al3-Mo7.5-Cr 11	β	VT15		I,BA	UR
Ti-Al2.5-V4.5-Mo5	near- β	VT16		I,BA	UR
Ti-Al6-Mo1-Zr 11-Si0.15	near- α	VT18		I,BA	UR
Ti-Al6.5-V1-Mo1-Zr2	near- α	VT20		I,BI,P,SH,E	UR
Ti-Al6-V1-Mo0.7-Zr5-Cr0.3-Si0.2	near- α	VT21L		I,C	UR
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1	near- β	VT22		I,BA,E	UR
Ti-Al1-Mn1	near- α	OT4-0		I,BI,BA,P,SH,ST,F,E,T	UR
Ti-Al2-Mn1.5	$\alpha+\beta$	OT4-1		I,BI,BA,W,P,SH,ST,E,T	UR
Ti-Al3-Mn1.5	$\alpha+\beta$	OT4		I,BI,BA,W,P,SH,E,T	UR
Ti-Al6-Mn1.5-(Zr)1.5(*F)	$\alpha+\beta$	OT4-2		I,BI,BA,SH,T	UR
Ti-Mo1.5-Zr2.5	$\alpha+\beta$	AT2			UR
Ti-Al3-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT3			UR
Ti-Al4.5-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT4			UR
Ti-Al6-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT6			UR
Ti-Pd0.15-0.20	α	4200	(Pd alloy)		UR
Ti-Mo 32	β	4201			UR
Ti-Mo 32-Cb/Nb1.5	β	4203			UR

TABLE 1F.4. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Ta5	α	4204			UR
Ti-Al3-V7-Mo3.5-Cr 10	β	TS6			UR
Ti-Al3-Mo7-Cr5.5-Fe3	β	IVT-1			UR

(*A) Additional Compositions are included which are believed to be commonly produces.

(*B) Modifications of the compositions listed are frequently reported with the same designations.

(*C) I=INGOT, BI=BILLET, BA=BAR and ROD, W=WIRE, P=PLATE, SH=SHEET, ST=STRIP, F=FOIL, E=EXTRUSION, T=TUBING, and C=CASTINGS. Additionally, the brochure lists specific forging forms, e.g. blades, rings, and discs, and extruded forms for some alloys.

(*D) VT1-11=highest purity grade.

(*E) VT1L, unalloyed Ti castings grade contains Si0.2.

(*F) OT4-2 is listed with and without Zr.

(*G) Typically Cr0.7-Fe0.7-Si0.1-B0.005

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATION FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.5. TYPICAL TITANIUM ALLOYS OFFERED IN CZECHOSLOVAKIA
(Arranged by CSN Standard Numbers)⁽⁹⁾

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99.5,CP,-40 ksi YS	a	CSN 42 4655	(CP)	All forms	CZ
Ti-unalloyed-99.5,CP,-40 ksi YS	a	CSN 42 4656	(CP)	Ti ingots	CZ

Note:

The other Czechoslovakian Standards for titanium do not relate to composition, but pertain to various titanium products as follows:

CSN 42 1490 - Titanium sheets, bands and strips

CSN 42 1491 - Titanium wires

CSN 42 1492 - Titanium bars

CSN 42 1493 - Titanium seamless tubing

CSN 42 1496 - Titanium ingots.

(*A) BI=BILLETS, BA=BAR, P=PLATE, SH=SHEET, ST=STRIP.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.6. TYPICAL TITANIUM ALLOYS OFFERED BY JAPAN
(Arranged by Japanese Standard and Alloy Symbol Number)^(29,57)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Products(*I) Forms	Ctry Code
Ti-unalloyed-99. ,CP,- ksi YS	a	KS-50(*A)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	KS-70(*A)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	ST-40(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	ST-50(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	ST-60(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	ST-70(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	ST-80(*B)	(CP)	All forms	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	a	TTH 28(*C)	(CP)	Tubing/heat exch. cl. 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	a	TTH 35(*C)	(CP)	Tubing/heat exch. cl. 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	a	TTH 49(*C)	(CP)	Tubing/heat exch. cl. 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	a	TB 28(*D)	(CP)	Titanium bar, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	a	TB 35(*D)	(CP)	Titanium bar, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	a	TB 40(*D)	(CP)	Titanium bar, class 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	a	TW 28(*E)	(CP)	Titanium wire, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	a	TW 35(*E)	(CP)	Titanium wire, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	a	TW 49(*E)	(CP)	Titanium wire, class 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	a	TTP 28(*F)	(CP)	Ti ord. piping, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	a	TTP 35(*F)	(CP)	Ti ord. piping, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	a	TTP 40(*F)	(CP)	Ti ord. piping, class 3	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	TS-105(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	TS-120(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	TS-140(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	a	TS-160(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	a	TP 28(*H)	(CP)	Ti plate, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	a	TP 35(*H)	(CP)	Ti plate, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	a	TP 49(*H)	(CP)	Ti plate, class 3	JA

(*A) Titanium alloys of Kobe Steel Company.

(*B) Titanium alloys of Sumitomo Light Metal Industries (later Nippon Steel Co.).

(*C) JIS Standard H4631.

(*D) JIS Standard H4650.

(*E) JIS Standard H4670.

(*F) JIS Standard H4630.

(*G) JIS Standard H2151(sponge Ti).

(*H) JIS Standard H4600.

(*I) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.7. TYPICAL TITANIUM ALLOYS REFERENCED BY SPAIN
(Arranged by the Spanish Alloy Designation Number)⁽³⁰⁾

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99.6,CP,-25 ksi YS	α	INTA L-7001	(CP)	All forms	SP
Ti-unalloyed-99.5,CP,-40 ksi YS	α	INTA L-7002	(CP)	All forms	SP
Ti-unalloyed-99.2,CP,-55 ksi YS	α	INTA L-7003	(CP)	All forms	SP
Ti-unalloyed-99.0,CP,-70 ksi YS	α	INTA L-7004	(CP)	All forms	SP
Ti-Pd0.12-0.25	α	INTA L-7021	(Pd alloy)	All forms	SP
Ti-Al5-Sn2.5	α	INTA L-7101	(A-110)	All forms	SP
Ti-Al6-V4	$\alpha+\beta$	INTA L-7301	(6-4)	All forms	SP
Ti-Cu2.5	α dispers.	INTA L-7501	(IMI-230)	BI,BA,P,SH	SP
Ti-Al3-V 13,Cr 11	β	INTA L-7701	(13-11-3)		SP

(*A) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

(*B) Alloy designations furnished by the Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.8. TYPICAL TITANIUM ALLOYS REFERENCED BY ISO (INTERNATIONAL STANDARDS ORGANIZATION) (Arranged by ISO Standard Numbers)⁽⁷⁾

Nominal Composition Wt %	Alloy Type	Alloy(*B) Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99. ,CP,- ksi YS	<i>a</i>	Ductile Titanium	IMI-115, CP	All forms	XX
Ti-unalloyed-99. ,CP,- ksi YS	<i>a</i>	Resilient	IMI-155/60	All forms	XX
Ti-unalloyed-99. ,CP,- ksi YS	<i>a</i>	Alloy	IMI-318, CP	All forms	XX
Ti-unalloyed-99. ,CP,- ksi YS	<i>a</i>	TC 119/SC5		Powder	XX

(*A) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

(*B) ISO Draft Specifications. The wrought alloys are intended for surgical implants.

TABLE 1G. CURENT AMS (AEROSPACE MATERIALS SPECIFICATIONS) SPECIFICATIONS COVERING
TITANIUM AND TITANIUM ALLOYS^(36,45)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4900D	05-72	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 55,000 psi (379 MPa) Yield, (Unalloyed Ti)
US	AMS 4901E	11-72	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 70,000 psi (483 MPa) Yield, (Unalloyed Ti)
US	AMS 4902B	11-68	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 40,000 psi Yield, (Unalloyed Ti)
US	AMS 4906	11-69	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-6Al-4V, Continuously Rolled, Annealed
US	AMS 4907C	06-75	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Ti-6Al-4V, Extra-Low Interstitial, Annealed
US	AMS 4908C	06-75	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-8Mn, Annealed, 110,000 psi Yield
US	AMS 4909C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-5Al-2.5Sn, Extra-Low Interstitial, Annealed
US	AMS 4910F	06-75	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-5Al-2.5Sn, Annealed
US	AMS 4911C	12-73	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-6Al-4V, Annealed
US	AMS 4912A	11-68	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-4Al-3Mo-1V, Solution Heat Treated
US	AMS 4913A	11-68	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-4Al-3Mo-1V, Solution and Precipitation Treated
US	AMS 4915C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-8Al-1Mo-1V, Single Annealed
US	AMS 4916C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-8Al-1Mo-1V, Duplex Annealed
US	AMS 4917B	05-69	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-13.5V-11Cr-3Al, Solution Heat Treated

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4918D	06-75	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-6Al-6V-2Sn, Annealed
US	AMS 4921C	01-76	Aerospace Material Specification for Titanium Bars, Forgings, and Rings-Annealed, 70,000 psi (483 MPA) Yield, (Unalloyed Ti)
US	AMS 4924C	01-76	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-5Al-2.5Sn, Extra-Low Interstitial, Annealed
US	AMS 4926E	01-76	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-5Al-2.5Sn, Annealed, 110,000 psi (758 MPA) Yield
US	AMS 4928G	11-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-4V, Annealed, 120,000 psi (827 MPA) Yield
US	AMS 4930A	01-76	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-4V, Extra-Low Interstitial, Annealed
US	AMS 4934	06-75	Aerospace Material Specification for Titanium Alloy Extrusions and Flash-Welded Rings, Ti-6Al-4V, Solution Heat Treated and Aged
US	AMS 4935C	06-75	Aerospace Material Specification for Titanium Alloy Extrusions and Flash-Welded Rings, Ti-6Al-4V, Annealed
US	AMS 4936	11-71	Aerospace Material Specification for Titanium Alloy Extrusions, Ti-6Al-6V-2Sn
US	AMS 4941A	12-74	Aerospace Material Specification for Titanium Tubing, Welded-Annealed, 40,000 psi (276 MPA) Yield, (Unalloyed Ti)
US	AMS 4942A	01-76	Aerospace Material Specification for Titanium Tubing, Seamless-Annealed, 40,000 psi (276 MPA) Yield, (Unalloyed Ti)
US	AMS 4943	11-71	Aerospace Material Specification for Titanium Alloy Tubing, Seamless-Annealed, Ti-3Al-2.5V
US	AMS 4944	06-74	Aerospace Material Specification for Titanium Alloy Tubing, Seamless-Hydraulic, Ti-3Al-2.5V, Cold-Worked, Stress-Relieved
US	AMS 4915C	05-72	Aerospace Material Specification for Titanium Wire, Welding, (Unalloyed Ti)
US	AMS 4953	03-58	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-5Al-2.5Sn, Annealed

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4954B	11-72	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-6Al-4V
US	AMS 4955	09-65	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-8Al-1Mo-1V
US	AMS 4956	05-69	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-6Al-4V, Extra-Low Interstitial, Environment Controlled
US	AMS 4965C	12-74	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-4V, Solution and Precipitation Heat Treated
US	AMS 4966E	12-74	Aerospace Material Specification for Titanium Alloy Forgings, Ti-5Al-2.5Sn, Annealed, 110,000 psi (758 MPA) Yield
US	AMS 4967D	05-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-4V, Annealed, Heat Treatable
US	AMS 4970C	05-70	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-7Al-4Mo, Solution and Precipitation Treated
US	AMS 4971A	05-70	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Annealed, Heat Treatable
US	AMS 4972A	05-70	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-8Al-1Mo-1V, Solution Treated and Stabilized
US	AMS 4973A	05-70	Aerospace Material Specification for Titanium Alloy Forgings, Ti-8Al-1Mo-1V, Solution Treated and Stabilized
US	AMS 4974	11-67	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-11Sn-5Zr-2.3Al-1Mo-0.21Si, Solution and Precipitation Treated
US	AMS 4975B	11-71	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-6Al-2Sn-4Zr-2Mo, Solution and Precipitation Treated
US	AMS 4976	05-68	Aerospace Material Specification for Titanium Alloy Forgings, Ti-6Al-2Sn-4Zr-2Mo, Solution and Precipitation Treated
US	AMS 4977A	11-72	Aerospace Material Specification for Titanium Alloy Bars and Wire, Ti-11.5Mo-6Zr-4.5Sn, 1275-1350 F, (690.6-732.2 C), Solution Heat Treated

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4978A	05-71	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Annealed, 140,000 psi Yield
US	AMS 4979	05-70	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Solution and Precipitation Heat Treated
US	AMS 4980A	11-72	Aerospace Material Specification for Titanium Alloy Bars and Wire, Ti-11.5Mo-6Zr-4.5Sn, 1375 F, (746 C), Solution Heat Treated
US	AMS 4981	11-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-2Sn-4Zr-6Mo, Solution and Precipitation Heat Treated
US	AMS 4982	12-74	Aerospace Material Specification for Titanium Alloy Bars, Ti-45Cb, Annealed

TABLE 1H. CORRELATION OF AMS STANDARD COMPOSITIONS WITH AMS PRODUCT FORM SPECIFICATIONS
(Alphanumerical by Computerized Format)⁽⁴⁵⁾

Nominal Composition Wt % (Computerized Format)	Forgings	Bars	Rings	Wire	Plate	Sheet	Strip	Tubing	Extrusions
Ti-unalloyed-99.0,CP,70 ksi YS, ann.	4921C	4921C	4921C		4901E	4901E	4901E		
Ti-unalloyed-99.2,CP,55 ksi YS, ann.					4900D	4900D	4900D		
Ti-unalloyed-99.5,CP,40 ksi YS, ann.								4942A (seamless)	
Ti-unalloyed-99.5,CP,40 ksi YS, ann.				4951C (welding)	4902B	4902B	4902B	4941A (welded)	
Ti-Al1-V8-Fe5									
Ti-Al2-V 11-Sn2-Zr 11									
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2, sta	4974	4974							
Ti-Al3-Cr5, not current	4927	4927							
Ti-Al3-V2.5, ann.									
Ti-Al3-V8-Mo4-Zr4-Cr6									
Ti-Al3-V8-Mo8-Fe2									
Ti-Al3-V 13-Cr 11, sol. treated					4917B	4917B	4917B		
Ti-Al4-Mn4, not current	4925B	4925B							
Ti-Al4-V1-Mo3, sol. treated						4912A	4912A		
Ti-Al4-V1-Mo3, sta						4913A	4913A		
Ti-Al5-Mo2-Sn6-Zr2-Si0.25									
Ti-Al5-Mo4-Sn2-Zr2-Cr4									
Ti-Al5-Sn2.5 ELL, ann. 90 ksi YS	4924C	4924C	4924B		4909C	4909C	4909C		
Ti-Al5-Sn2.5, ann. 110 ksi YS	4966D	4926E	4926E	4953 (welding)	4910F	4910F	4910F		
Ti-Al5-Sn5-Zr5, not current	4968A	4968A							
Ti-Al5.4-Mo1.25-Cr1.4-Fe1.5, not current	4969	4929							
Ti-Al6-Mo0.8-Cb/Nb2-Ta1									
Ti-Al6-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1									
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2									
Ti-Al6-Mo2-Sn2-Zr4, sta	4976	4975B	4975B						
Ti-Al6-Mo6-Sn2-Zr4, sta	4981	4981							
Ti-Al6-V4, ann. heat treatable	4967D	4967D							
Ti-Al6-V4, ann. 120 ksi YS	4928G	4928G		4954B (welding)	4911C	4911C	4911C		4935C
Ti-Al6-V4, continuously rolled, ann.						4906	4906		

TABLE 1H. (Continued)

Nominal Composition Wt % (Computerized Format)	Forgings	Bars	Rings	Wire	Plate	Sheet	Strip	Tubing	Extrusions
Ti-Al6-V4, ELI, ann.	4930A	4930A	4930A	4956 (welding)	4907C	4907C	4907C		
Ti-Al6-V4, sta	4965C	4965C	4965C						
Ti-Al6-V6-Sn2, ann. heat treatable	4971A	4971A	4971A						
Ti-Al6-V6-Sn2, ann. 140 ksi YS	4978A	4978A	4978A		4918D	4918D	4918D		4936
Ti-Al6-V6-Sn2, sta	4979	4979	4979						
Ti-Al7-Mo4, sta	4970C	4970C							
Ti-Al8-V1-Mo1, duplex ann.					4916C	4916C	4916C		
Ti-Al8-V1-Mo1, single ann.					4915C	4915C	4915C		
Ti-Al8-V1-Mo1, sol. treated and aged	4973A	4972A	4972A	4955 (welding)					
Ti-Cu2									
Ti-Mn8, ann. 110 ksi YS									
Ti-Mo2-Cr2-Fe, not current	4923A	4923A							
Ti-Mo 11.5-Sn4.5-Zr6, sol. treated		4977A		4977A					
Ti-Mo 11.5-Sn4.5-Zr6, 1375 F, sol. treat.		4980A		4980A					
Ti-Ni1-2									
Ti-Pd0.15-0.20									

Note: Ann. = annealed, YS = Yield Strength, sol = solution, sta = solution and precipitation heat treated (i.e., aged).

TABLE 11. CURRENT ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) STANDARD SPECIFICATIONS COVERING TITANIUM AND TITANIUM ALLOYS^(37,45)

Ctry Code	Standard Number	Year	Title of Standard
US	ASTM B265-74	1974	ASTM Standard Specification for Titanium and Titanium Alloy Strip, Sheet, and Plate
US	ASTM B299-74	1974	ASTM Standard Specification for Titanium sponge
US	ASTM B348-74	1974	ASTM Standard Specification for Titanium and Titanium Bars and Billets
US	ASTM B337-74	1974	ASTM Standard Specification for Seamless and Welded Titanium and Titanium Alloy Pipe
US	ASTM B338-74	1974	ASTM Standard Specification for Seamless and Welded Titanium and Titanium Alloy Tubes for Condensers and Heat Exchangers
US	ASTM B363-71	1971	ASTM Standard Specification for Seamless and Welded Unalloyed Titanium Welding Fittings
US	ASTM B367-69	1969	ASTM Standard Specification for Titanium and Titanium Alloy Castings
US	ASTM B381-75	1975	ASTM Standard Specification for Titanium and Titanium Alloy Forgings
US	ASTM B382-64*	1964	ASTM Standard Specification for Titanium and Titanium Alloy Bare Welding Rods and Electrodes-Discontinued in 1969, See AWS A5.16-70
US	ASTM F67-74	1974	ASTM Standard Specification for Titanium for Surgical Implants
US	ASTM F136-70	1970	ASTM Standard Specification for Titanium 6Al-4V ELI Alloy for Use in Clinical Evaluations as a Surgical Implant Material

* Non current standard.

TABLE 1J. CORRELATION OF ASTM TITANIUM AND TITANIUM ALLOY COMPOSITIONS WITH ASTM GRADE NUMBERS
AND ASTM STANDARD FORM SPECIFICATIONS⁽⁴⁵⁾

Nominal Composition Wt. %	B348-74 Bars and Billets	B381-75 Forgings	B265-74 Strip, Sheet, and Plate	B337-74 Pipe	B338-74 Tubing	B363-71 Welding Fittings	B367-69(74) Castings	F67-74(*D) Wrought Forms	F136-70(*D) Wrought Forms
Ti-unalloyed-99.6CP, 25 ksi YS (low iron, low interstitials)	Grade 1	Grade F-1	Grade 1	Grade 1	Grade 1	WPT1(*A)	Grade C-1	--	--
Ti-unalloyed-99.5CP, 40 ksi YS (intermediate iron and interstitials)	Grade 2	Grade F-2	Grade 2	Grade 2	Grade 2	WPT2(*A)	Grade C-2	--	--
Ti-unalloyed-99.2CP, 55 ksi YS (intermediate iron and interstitials)	Grade 3	Grade F-3	Grade 3	Grade 3	Grade 3	WPT3(*A)	Grade C-3	Grade 3(*B)	--
Ti-unalloyed-99.0CP, 70 ksi YS (high iron and interstitials)	Grade 4	Grade F-4	Grade 4	Grade 4	Grade 4	--	Grade C-4	Grade 4(*C)	--
Ti-Al6-V4	Grade 5	Grade F-5	Grade 5	--	--	--	Grade C-5	--	--
Ti-Al6-V4 ELI (high purity)	--	--	--	--	--	--	--	--	Ti-Al6-V4 ELI
Ti-Al5-Sn2.5	Grade 6	Grade F-6	Grade 6	--	--	--	Grade C-6	--	--
Ti-Pd0.12-0.25 (low iron and low interstitials)	--	--	--	--	--	--	Grade C-7A	--	--
Ti-Pd0.12-0.25 (intermediate iron and interstitials)	Grade 7	Grade F-7	Grade 7	Grade 7	Grade 7	--	Grade C-7B	--	--
Ti-Pd1.2-0.25 (intermediate iron, high interstitials)	--	--	--	Grade 8	Grade 8	--	Grade C-8A	--	--
Ti-Pd1.2-0.25 (high iron and interstitials)	--	--	--	--	--	--	Grade C-8B	--	--
Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	--	Grade 10	--	--	--	--	--	--

(*A) When fittings are of welded construction, the symbol shown shall be supplemented by the letter (W). The designated grades correspond to grades 1, 2, and 3 of B348, B265, B337, B338, and grades C-1, C-2, and C-3 of B367.

(*B) Corresponds to grade 3 of B348, B381, and B265.

(*C) Corresponds to grade 4 of B381 and B265.

(*D) Material for surgical implants.

TABLE 1K. CURRENT MIL (US MILITARY) SPECIFICATIONS COVERING TITANIUM AND TITANIUM ALLOYS^(44,45,57)

Ctry Code	Standard Number	Date		Title of Standard
		Mo	Yr	
US	MIL-HDBK 697A	06	74	US Military Handbook, Titanium and Titanium Alloys
US	MIL-F-83142A	12	69	US Military Specifications, Forging, Titanium Alloys, Premium Quality
US	MIL-H-81200A	09	68	US Military Specification, Heat Treatment of Titanium and Titanium alloy
	+ Amendment No. 1	03	69	
US	MIL-T-9046H	03	74	US Military Specification, Titanium and Titanium Alloy, Sheet, Strip, and Plate (Superseding MIL-T-009046G)
US	MIL-T-9047E	06	70	US Military Specification, Titanium and Titanium Alloy Bars and Forging Stock
US	MIL-T-009047F	03	71	US Military Specification, Titanium and Titanium Alloy Bars and Forging Stock
	+ Amendment No. 1	09	72	
US	MIL-T-13405C	05	66	US Military Specification, Titanium Powder
US	MIL-T-46035A	10	66	US Military Specification, Titanium Alloy, High Strength Wrought, (for Critical Components)
	+ Amendment No. 1	05	72	
US	MIL-T-46038B	06	76	US Military Specification, Titanium Alloy Wrought, Rods, Bars, and Billets (for Critical Applications)
US	MIL-T-46077B	07	75	US Military Specification, Titanium Alloy Armor Plate, Weldable
US	MIL-T-81556	03	68	US Military Specification, Titanium and Titanium Alloy Bars, Rods, and Special Shaped Sections Extruded
US	MIL-T-81915	03	73	US Military Specification, Titanium and Titanium-Alloy Castings, Invertment
US	MIL-R-81588	07	70	US Military Specification, Welding Rods and Wire, Titanium and Titanium Alloys
US	MIL-W-6858C	10	64	US Military Specification, Welding Resistance: Aluminum, Magnesium, Non-Hardening Steels or Alloys, Nickel Alloys, Heat Resisting Alloys, and Titanium Alloys, Spot and Seam
	+ Amendment No. 1	06	65	
US	MIL-T-13405C	05	65	US Military Specification for Titanium Powder (for Pyrotechnic Use)

The use of double zeros (00) in standard numbers indicates an uncoordinated specification, and not necessarily accepted by all services.

TABLE 1L. CORRELATION OF US MILITARY SPECIFICATIONS (45)

Nominal Composition Wt %	MIL-T-9047E Bars, Forgings, and Forging Stock	MIL-T-009047(*A) Bars and Forging Stock	MIL-F-83142A Premium Quality Material	MIL-T-9046H Sheet, Strip, and Plate	MIL-T-81556 Bars, Rods, Special Shapes, and Extrusions	MIL-R 81588 Welding Rods and Wire
Ti-unalloyed-high purity grade						
Ti-unalloyed-99.5 CP	Composition 1 (all unalloyed grades are in this category)	Composition 1 (all unalloyed grades are in this category)	Composition 1 (all unalloyed grades are in this category)	Type I, Composition A unalloyed (40 ksi YS)	Type I, Composition A	--
Ti-unalloyed-99.0 CP	Composition 2	Composition 2	Composition 2	Type I, Composition B unalloyed (55 ksi YS)	Type I, Composition B	--
Ti-PD0.15-0.20	Composition 3	Composition 3	Composition 3	Type I, Composition C unalloyed (70 ksi YS)	Type I, Composition C	--
Ti-A15-Sn2.5						
Ti-A15-Sn2.5 ELI	Composition 1	Composition 1	Composition 1	Type II, Composition A	Type II, Composition A	--
Ti-Ni1-2	Composition 2	Composition 2	Composition 2	Type II, Composition B	Type II, Composition B	--
Ti-Cu2	Composition 3	Composition 3	Composition 3	Type II, Composition C	Type II, Composition C	--
Ti-A12.25-Mo1-Sn 11-Zr5-Si0.2	Composition 10	Composition 10	Composition 10	Type II, Composition D	Type II, Composition D	--
Ti-A15-Mo1-Sn6-Zr2-Si0.25						
Ti-A16-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1						
Ti-A16-Mo0.8-Cb/Nb2-Ta1						
Ti-A18-V1-Mo1	Composition 5	Composition 5	Composition 5	Type II, Composition C	Type II, Composition C	--
Ti-Mn8						
Ti-A13-V2.5	Composition 6	Composition 6	Composition 6	Type II, Composition C	Type II, Composition C	--
Ti-A14-V1-Mo3	Composition 7	Composition 7	Composition 7	Type II, Composition C	Type II, Composition C	--
Ti-A15-Mo4-Sn2-Zr2-Cr4	Composition 8	Composition 8	Composition 8	Type II, Composition C	Type II, Composition C	--
Ti-A16-V4	Composition 9	Composition 9	Composition 9	Type II, Composition C	Type II, Composition C	--
Ti-A16-V4 ELI	Composition 10	Composition 10	Composition 10	Type II, Composition C	Type II, Composition C	--
Ti-A16-V4 SPL	Composition 11	Composition 11	Composition 11	Type II, Composition C	Type II, Composition C	--
Ti-A16-V6-Sn2	Composition 12	Composition 12	Composition 12	Type II, Composition C	Type II, Composition C	--
Ti-A16-Mo2-Sn2-Zr4	Composition 13	Composition 13	Composition 13	Type II, Composition C	Type II, Composition C	--
Ti-A16-Mo6-Sn2-Zr4	Composition 14	Composition 14	Composition 14	Type II, Composition C	Type II, Composition C	--
Ti-A16-Mo2-Sn2-Zr2-Cr2-Si0.2	Composition 15	Composition 15	Composition 15	Type II, Composition C	Type II, Composition C	--
Ti-A17-Mo4	Composition 16	Composition 16	Composition 16	Type II, Composition C	Type II, Composition C	--
Ti-A11-V8-Fs5						
Ti-A12-V 11-Sn2-Zr 11						
Ti-A13-V8-Mo4-Zr4-Cr6						
Ti-Mo 11.5-Sn4.5-Zr6						
Ti-A13-V8-Mo8-Fe2						
Ti-A13-V 13-Cr 11						
Ti-A15-Sn5-Zr5(*B)						
Ti-A17-Zr 12(*B)						
Ti-A17-Cb/Nb2-Ta1(*B)						
Ti-A14-V4(*B)						
Ti-A15-Mo1-Cr1.5-Fe1.5(*B)						
Ti-Mo2-Cr2-Fe2(*B)						

Note: ELI = extra-low interstitial. SPL = special low, 0.005H.

(*A) An uncoordinated specification.

(*B) Alloys used infrequently.

TABLE 1M. CURRENT AWS (AMERICAN WELDING SOCIETY) STANDARDS COVERING TITANIUM AND TITANIUM ALLOY WELDING RODS^(45,57)

Ctry Code	Standard Number	Year	Title of Standard
US	AWS A5.16-70	1970	American Welding Society Specifications for Titanium and Titanium Alloy Bare Welding Rods and Electrodes (Covers Four Unalloyed Ti Materials, Two Ti-6Al-4V Materials, Two Ti-5Al-2.5Sn Materials, Two Ti-3Al-2.5V Materials As Well As, Ti-Pd0.15--0.25, Ti-8Al-1Mo-1V, Ti-6Al-2Cb-1Ta-0.8Mo, and Ti-13V-11Cr-3Al Alloys)

Note: Detailed composition of each of the 10 materials is shown in Table 1E.2.

TABLE 1N. COMPARISON OF TITANIUM SPONGE SPECIFICATIONS OF US NATIONAL STOCKPILE PURCHASE SPECIFICATIONS, ASTM, USSR, AND JAPAN (Sequenced by the Important Impurities) (percent by weight on a dry basis)⁽⁵⁷⁾

	US Specifications, National Stockpile Purchase Specifications P-97-R5 (8/15/69)(^(*) A)				Soviet Produced Sponge GOST-5303 MRTU-14 1960				Japanese Produced Sponge Range H2151-1969				US Specifications ASTM SPEC B-299-69			
	Grade 1A-0		Grade 1B-0		TG-110		TG-120		Minus 100BHN Typical		Minus 120BHN Typical		MD-120		ML-120	
	Type A (^(*) B)	Type B (^(*) B)	Type C (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type A (^(*) B)	Type B (^(*) B)	Type B (^(*) B)	Type C (^(*) B)
Nitrogen Maximum %	0.015	0.015	0.010	0.015	0.02	0.03	0.03	0.005 to 0.008	0.005 to 0.008	0.005 to 0.008	0.005 to 0.008	0.015	0.015	0.015	0.015	0.010
Carbon Maximum %	0.020	0.025	0.020	0.020	0.03	0.03	0.03	0.006 to 0.007	0.006 to 0.007	0.010	0.010	0.020	0.020	0.025	0.025	0.020
Sodium Total Maximum %	—	—	0.19	—	(N)	(N)	(N)	—	—	—	—	—	—	—	—	0.190
Magnesium Maximum %	0.08	0.40	—	0.08	(N)	(N)	(N)	0.030 to 0.40	0.030 to 0.40	0.030 to 0.060	0.030 to 0.060	0.30	0.30	0.50	0.50	—
Chlorine Maximum %	0.12	0.15	0.20	0.12	0.08	0.08	0.08	0.070 to 0.090	0.070 to 0.090	0.070 to 0.090	0.070 to 0.090	0.12	0.12	0.20	0.20	0.20
Iron Maximum %	0.12	0.10	0.05	0.05	0.07	0.07	0.11	0.020 to 0.050	0.020 to 0.050	0.020 to 0.050	0.020 to 0.050	0.12	0.12	0.10	0.10	0.05
Silicon Maximum %	0.04	0.04	0.04	0.04	0.04	0.04	0.05	less than 0.010	less than 0.010	less than 0.010	less than 0.010	0.04	0.04	0.04	0.04	0.04
Hydrogen Maximum %	0.005	0.03	0.05	0.005	(N)	(N)	(N)	0.002 to 0.003	0.002 to 0.003	0.002 to 0.003	0.002 to 0.003	0.005	0.005	0.03	0.03	0.05
Oxygen Maximum %	0.10	0.10	0.10	0.07	0.04	0.04	0.065	0.040 to 0.050	0.040 to 0.050	0.050 to 0.070	0.050 to 0.070	0.10	0.10	0.10	0.10	0.10
Water Maximum %	0.02	0.02	0.02	0.02	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
Total All Other Impurities	0.05	0.05	0.05	0.05	(N)	(N)	(N)	(N)	(N)	(N)	(N)	0.05	0.05	0.05	0.05	0.05
Titanium Balance (Nominally)	99.3	99.1	99.3	99.3	(N)	(N)	(N)	Plus	Plus	Plus	Plus	99.3	99.3	99.1	99.1	99.3
Brinell Hardness Number	120 max	120 max	120 max	120 max	100 max	100 max	120 max	97 to 99	97 to 99	100 to 106	100 to 106	120 max	120 max	120 max	120 max	120 max

(^(*)A) The sample shall be dried for 2 hours at 1350 C.

(^(*)B) Type A - Magnesium reduced and finished by vacuum distillation. Type A is produced only in Japan and the USSR.

Type B - Magnesium reduced and finished by acid leaching or inert gas-sweep distillation. Type B is produced by Oremet and Titanium Metals Corporation of America.

Type C - Sodium reduced and finished by acid leaching. Type C is produced by the RMI Company.

TABLE 10. CURRENT BRITISH STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS^(5,6,7)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS CP 3003 (9)	00/70	Titanium lining of vessels and equipment for chemical processes, guidance to manufacturers and users of lined vessels and equipment: selection, design, application, maintenance, inspection and testing, of linings: recommendations on design of the items to be lined
UK	BS 2TA1	11/74	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 290-420 MPA), (supersedes TA1)
UK	BS 2TA2	04/73	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 390-540 N/mm ²), (supersedes TA2)
UK	2TA3	04/73	Aerospace series specification for bars and sections for machining of commercially pure titanium (tensile strength 390-540 N/mm ²), supersedes TA3)
UK	BS 2TA4	04/73	Aerospace series specification for forging stock of commercially pure titanium (tensile strength 390-540 N/mm ²), (supersedes TA4)
UK	BS 2TA5	04/73	Aerospace series specification for forgings of commercially pure titanium (tensile strength 390-540 N/mm ²), (supersedes TA5)
UK	BS 2TA6	04/73	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 570-730 N/mm ²), (supersedes TA6)
UK	BS 2TA7	04/73	Aerospace series specification for bars and section for machining of commercially pure titanium (tensile strength 540-740 N/mm ²), (supersedes TA7)
UK	BS 2TA8	04/73	Aerospace series specification for forging stock of commercially pure titanium (tensile strength 540-740 N/mm ²), (supersedes TA8)
UK	BS 2TA9	04/73	Aerospace series specification for forgings of commercially pure titanium (tensile strength 540-740 N/mm ²), (supersedes TA9)
UK	BS 2TA10	05/74	Aerospace series specification for sheet and strip of titanium-aluminium-vanadium alloy (tensile strength 960-1270 MPA), (supersedes TA10)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 2TA11	05/74	Aerospace series specification for bars and section for machining of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 155 mm), (supersedes TA11)
UK	BS 2TA12	05/74	Aerospace series specification for forging stock of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 150 mm), (supersedes TA12)
UK	BS 2TA13	05/74	Aerospace series specification for forgings of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 150 mm), (supersedes TA13)
UK	BS TA14*	12/68	Aerospace series specification for aluminium-tin alloy sheets (tensile strength 82-108 HBAR), (supersedes DTD 5093)
UK	BS TA15*	12/68	Aerospace series specification for titanium-aluminium-tin alloy bars for machining (tensile strength 79-108 HBAR), (max. section 150 mm), (partially supersedes DTD 5083)
UK	BS TA16*	12/68	Aerospace series specification for titanium-aluminium-tin alloy forging stock (tensile strength 79-108 HBAR), (max. section 150 mm), (partially supersedes DTD 5083)
UK	BS TA17*	12/68	Aerospace series specification for titanium-aluminium-tin alloy forgings (tensile strength 79-108 HBAR), (max. section 150 mm)
UK	BS TA18** + Amend. 1052	12/68	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy bars for machining (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS TA19** + Amend. 1053	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forging stock (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS TA20** + Amend. 1054	12/68 12/71	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forgings (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS 2TA21	04/73	Aerospace series specification for sheet and strip of titanium-copper alloy (tensile strength 540-770 N/mm ²), (supersedes TA21)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 2TA22	04/73	Aerospace series specification for bars and section for machining of titanium-copper alloy (tensile strength 540-770 N/mm ²), (supersedes TA22)
UK	BS 2TA23	04/73	Aerospace series specification for forging stock of titanium-copper alloy (tensile strength 540-770 N/mm ²), (supersedes TA23)
UK	BS 2TA24	04/73	Aerospace series specification for forgings of titanium-copper alloy (tensile strength 540-770 N/mm ²), (supersedes TA24)
UK	BS TA25** + Amend. 1056	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy bars for machining (tensile strength 103-127 HBAR), (max. section 75 mm)
UK	BS TA27 + Amend. 1057	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forgings (tensile strength 103-127 HBAR), (max. section 75 mm)
UK	BS 2TA28	05/74	Aerospace series specification for titanium-aluminium-vanadium alloy forging stock (tensile strength 1110-1130 HBAR), (max. section 20 mm), (primarily intended for the manufactures of fasteners for British Standards), (supersedes TA28)
UK	BS TA27 + Amend. 1057	12/68 12/72	Aerospace series specification for titanium-tin-aluminium-molybdenum-tin-silicon alloy bars for machining (tensile strength 114-136 HBAR), (max. section 25 mm)
UK	BS TA30*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forging stock (tensile strength 114-136 HBAR), (max. section 25 mm), (partially supersedes DTD 5103)
UK	BS TA31*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forgings (tensile strength 114-136 HBAR), (max. section 25 mm), (partially supersedes DTD 5153)
UK	BS TA32*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy for machining (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5103)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA33*	07/69	Aerospace series specification for titanium-aluminium-tin-silicon alloy forging stock (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5103)
UK	BS TA34*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forgings (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5153)
UK	BS TA35*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supersedes DTD 5103)
UK	BS TA36*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forging stock (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supercedes DTD 5103)
UK	BS TA37*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-silicon alloy forgings (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supersedes DTD 5153)
UK	BS TA38	09/71	Aerospace series specification for machining of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1250-1420 N/mm ²), (max. section 20 mm), (partially supercedes DTD 5203)
UK	BS TA39	09/71	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1250-1429 N/mm ²), (max. section 25 mm), (partially supersedes DTD 5203)
UK	BS TA40	09/71	Aerospace series specification for bars for machining of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm ²), (partially supersedes DTD 5203)
UK	BS TA41	09/71	Aerospace series specification for forging stock of titanium-aluminium-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm ²), (max. section 25-75 mm), (partially supersedes DTD 5203)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA42	09/71	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm ²), (max. section 25-75 mm), (partially supersedes DTD 5223)
UK	BS TA43 + Amend. 1623	06/72 11/72	Aerospace series specification for forging stock of titanium-aluminium-zirconium-molybdenum-silicon alloy (tensile strength 990-1140 N/mm ²), (max. section 65 mm)
UK	BS TA44	06/72	Aerospace series specification for forgings of titanium-aluminium-zirconium-molybdenum-silicon alloy (tensile strength 990-1140 N/mm ²), (max. section 65 mm)
UK	BS TA45	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1100-1280 N/mm ²), (max. section 25 mm), (supersedes TA29)
UK	BS TA46	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1050-1220 N/mm ²), (max. section 25 mm), (supersedes TA32, partially supersedes TA35)
UK	BS TA47	02/73	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1050-1220 N/mm ²), (max. section 100 mm), (supersedes TA30 and TA33, partially supersedes TA35-see also TA50)
UK	BS TA48	02/73	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1050-1200 N/mm ²), (max. section 100 mm), (supersedes TA31 and TA34, partially supersedes TA37-see also TA51)
UK	BS TA49	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1000-1200 N/mm ²), (max. section 100-150 mm), (partially supersedes TA35)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA50	02/73	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1000-1200 N/mm ²), (max. section 100-150 mm), (partially supersedes TA36)
UK	BS TA51	02/73	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1000-1200 N/mm ²), (max. section 100-150 mm), (partially supersedes TA37)
UK	BS TA52	04/73	Aerospace series specification for sheet and strip of titanium-copper alloy (tensile strength 600-920 N/mm ²), (partially supersedes DTD 5233)
UK	BS TA53	04/73	Aerospace series specification for bars and sections for machining titanium-copper alloy (tensile strength 650-880 N/mm ²), (max. section 75 mm), (supersedes DTD 5243)
UK	BS TA54	04/73	Aerospace series specification for forging stock of titanium-copper alloy (tensile strength 650-880 N/mm ²), (supersedes DTD 5253)
UK	BS TA55	04/73	Aerospace series specification for forgings of titanium-copper alloy (tensile strength 650-880 N/mm ²), (max. section 75 mm), (supersedes DTD 5263)
UK	BS TA56	05/74	Aerospace series specification for plate of titanium-aluminium-vanadium alloy (tensile strength 895-1150 MPA), (max. thickness 100 mm)
UK	BS TA57	05/74	Aerospace series specification for plate of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1030-1220 MPA), (max. thickness 65 mm)
UK	BS TA58	05/74	Aerospace series specification for plate of titanium-copper alloy (tensile strength 520-640 MPA), (max. thickness 10 mm)
UK	BS 2TA100 + Amend. 1557	00/73 09/74	Aerospace series specification for procedure for inspection and testing of wrought titanium and titanium alloys

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 3531: Part 1	00/68	Metal implants and tools used in bone surgery part 1, materials used for metal surgical implants
UK	BS 3351 + Amend. PD522 805.44	00/68	British standard for metal surgical implants drills, and screwdrivers used in bone surgery

* Non current standard.

** Current standard but not recommended for new designs.

TABLE 1P. CURRENT FRENCH STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS^(7,10,21,23)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
FR	NF L 15-130	11/58	Norme Francaise (French National Standard) for titanium sheet -dimensions and tolerances
FR	NF L 21-107	03/75	Norme Francaise (french National Standard) for T40 pure titanium wires for rivets - dimensions
FR	NF L 21-110	09/75	Norme Francaise (French National Standard) for T40 pure titanium for rivets -specification techniques
FR	NF L 21-271	08/75	Norme Francaise (French National Standard) for composite rivets with a stem of titanium alloy T-A6V, with cylindrical heat - dimensions
FR	NF L 21-272	08/75	Norme Francaise (French National Standard) for composite rivets with a stem of titanium alloy T-AV6 with a 100 milled head - dimensions
FR	AIR 9182	00/58	Reglements AIR (French Aircraft Standard) conditions for receiving sheets of unalloyed titanium
FR	AIR 9183	11/66	Reglements AIR (French Aircraft Standard) conditions for receiving bars profile and forgings of titanium alloys
FR	AIR 9184	00/00	Reglements AIR (French Aircraft Standard) conditions for receiving titanium alloy fasteners
EU	AECMA TI-P 01		AECMA Norm for unalloyed titanium, Gr. 1
EU	AECMA TI-P 02		AECMA Norm for unalloyed titanium, Gr. 2
EU	AECMA TI-P 04		AECMA Norm for unalloyed titanium, Gr. 2
EU	AECMA TI-P 05		AECMA Norm for unalloyed titanium (rivet wire)
EU	AECMA TI-P 11		AECMA Norm for Ti-2.5Cu alloy (all forms)
EU	AECMA TI-P 62		AECMA Norm for Ti-4Al-4Mn alloy (BA,FG)
EU	AECMA TI-P 63		AECMA Norm for Ti-6Al-4V alloy (BA,SH,FG)
EU	AECMA TI-P 64		AECMA Norm for Ti-6Al-6V-2Sn alloy (BA,FG)
EU	AECMA TI-P 65		AECMA Norm for Ti-5Al-2.5Sn alloy (all forms)
EU	AECMA TI-P 66		AECMA Norm for Ti-8Al-1Mo-1V alloy (all forms)
EU	AECMA TI-P 67		AECMA Norm for Ti-6Al-5Zr-0.5Mo-0.25Si (BA,FG)
EU	AECMA TI-P 68		AECMA Norm for Ti-4Al-2Sn-4Mo-0.5Si (BA)

TABLE 1Q. CURRENT GERMAN STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS^(7,8,21)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
GY	DIN 17850	03/75	Deutsche Normen (German Standard) for titanium chemical compositions
GY	DIN 17851	12/73	Deutsche Normen (German Standard) for wrought titanium alloys
GY	DIN 17860	11/73	Deutsche Normen (German Standard) for plate, sheet, and strip of wrought titanium and titanium alloys
GY	DIN 17862	11/73	Deutsche Normen (German Standard) for bars of wrought titanium and titanium alloys
GY	DIN 17863	11/73	Deutsche Normen (German Standard) for titanium wire
GY	DIN 17864	11/73	Deutsche Normen (German Standard) for forgings of wrought titanium and titanium alloys
GY	DIN 3.7000 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7040 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7070 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7115	12/73	DIN Werkstoff Nr. (DIN Material Nr.) TiAl alloy, this grade specified in DIN 17851, 17860, 17862, and 17864
GY	DIN 3.7165	12/73	DIN Werkstoff Nr. (DIN Material Nr.) TiAl6V4 alloy, this grade specified in DIN 17851, 17860, 17862, and 17864
GY	LW 3.7024	00/00	Luftfahrt Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet and welding wire
GY	DIN 3.7025	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7034	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet, rod, forgings, and welding wire
GY	DIN 3.7035	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864

TABLE 1Q. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
GY	DIN 3.7055	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7064	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet, rod, and forgings
GY	DIN 3.7065	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7114	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-5Al-2.5Sn alloy for sheet, strip, bars, wire, and forgings
GY	LW 3.7124	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-2.5Cu alloy for sheet, strip, bars, wire, and forgings
GY	LW 3.7154	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-0.5Mo-5Zr-0.25Si alloy for bars and billets
GY	LW 3.7164	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-4V alloy for sheet, rod, forgings, and fastener stock
GY	LW 3.7174	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-6V-2Sn alloy
GY	LW 3.7184	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-4Al-2Sn-4Mo-0.5Si alloy for bars and billets
GY	VdTUV 230-1-68	00/68	Vereinigung der Technischen Überwachungsvereine (German Association for Technical Supervision) grades 1, 2, 3, and 4; supervision grades 1, 2, 3, and 4
GE	EMO	00/00	East German Standard for unalloyed titanium

TABLE 1R. CURRENT SOVIET STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS⁽⁸⁵⁾

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	AMTU 386-59	00/59	Soviet Aviation Metallurgical Specification for titanium tubing
UR	AMTU 388*	00/68	Soviet Aviation Metallurgical Specification for chemical composition of titanium alloys
UR	AMTU 449-59	00/59	Soviet Aviation Metallurgical Specification for titanium wire
UR	AMTU 451-67	00/67	Soviet Aviation Metallurgical Specification for titanium alloys, rolled bar, technical specification types covers round rolled bars of alloys VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	AMTU 457-67	00/67	Soviet Aviation Metallurgical Specification for sheet titanium alloys, cover alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5, VT6, VT14, and VT20
UR	AMTU 461-70	00/70	Soviet Aviation Metallurgical Specification for titanium alloy VT14, forgings and stampings
UR	AMTU 461-60	00/60	Soviet Aviation Metallurgical Specification for titanium sheet
UR	AMTU 476-61	00/61	Soviet Aviation Metallurgical Specification for titanium sheet, mechanical properties
UR	AMTU 487-20	00/00	Soviet Aviation Metallurgical Specification for titanium, extruded and rolled
UR	AMTU 55 2-69	00/69	Soviet Aviation Specification for titanium alloy bars for fasteners, covers VT16 alloys
UR	AMTU 553-63	00/63	Soviet Aviation Specification for titanium alloy bars for fasteners, covers alloys VT3-1 and VT16
UR	GOST 5303	00/69	USSR State Standards Committee Specification for sponge titanium, quality requirements for certified products
UR	OST19 90000-70	00/70	Soviet Industrial Specification for titanium alloys, stampings and forgings, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT5, VT6S, VT3-1, VT8, VT9, VT14, and VT20

TABLE 1R. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	OST1. 90002	00/70	Soviet Industrial Specification for titanium alloys, blade forgings (supersedes AMTU 368-62 section on blade forgings)
UR	OST1. 90006	00/70	Soviet Industrial Specification for titanium alloys, bars and stock for blade forgings (supersedes AMTU 518-68)
UR	OST1. 90013	00/71	Soviet Industrial Specification for titanium alloys, grades VT1-00, OT401, and OT4 (supersedes AMTU 388-68)
UR	OST1. 90015	00/71	Soviet Industrial Specification for titanium welding rod wire (supersedes AMTU 449-65)
UR	OST1. 90024-71	00/71	Soviet Industrial Specification for titanium alloys, plate, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, and VT14
UR	OST1. 90027-71	00/71	Soviet Industrial Specification for titanium alloys, band (narrow strip), covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90107-73	00/73	Soviet Industrial Specification for titanium alloys, wrought bars, round and square, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	OST1. 90050-72	00/72	Soviet Industrial Specification for titanium alloys, pipe rolled and drawn, technical specification, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, and OT4
UR	OST1. 90051-72	00/72	Soviet Industrial Specification for titanium alloys, welded round pipe, technical specification, covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90065-72	00/72	Soviet Industrial Specification for titanium alloys, high quality drawn and rolled pipes, covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90154-74	00/74	Soviet Industrial Specification for titanium alloys, foil, covers alloys: VT1-00 and VT1-0
UR	TU 48-05-03	00/71	Soviet Technical Specification for titanium electrolytic powder (supersedes VTU 9-3-67 no. 19, VTU 3-30-69 and VTU IT 10-68)

TABLE 1R. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	TU-92-62-6-72	00/72	Soviet Technical Specification for titanium alloys, large size round rolled wrought bars, covers alloys: VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT5, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	TU1-5-054-72	00/72	Soviet Technical Specification for titanium alloy sheet, covers alloy: AT3
UR	TU1-83-21-72	00/72	Soviet Technical Specification for titanium alloys, general purpose, large round bars, covers alloys: VT1-00, VT1-0, OT4-0, OT4, VT5-1, VT6S, VT3-1, VT8, VT9, and VT14
UR	TU1-92-2-72	00/72	Soviet Technical Standard for stampings and forgings of VT22 titanium alloy
UR	TU1-5-055-72	00/72	Soviet Technical Specification for titanium alloy AT3, rolled and wrought bars
UR	TU1-5-058-72	00/72	Soviet Technical Standard for forgings of AT3 titanium alloy
UR	TU1-5-107-73	00/73	Soviet Technical Specification for titanium alloys, extruded pipe, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, and OT4
UR	TU1-5-111-73	00/73	Soviet Technical Specification for titanium alloys, wide strip, covers alloys: VT1-00 and VT1-0

* Non current standard.

TABLE 1S. CURRENT CZECHOSLOVAKIAN STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS⁽⁹⁾

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
CZ	CSN 42-1490	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium sheet, band and strip, technical delivery code
CZ	CSN 42-1491	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium wires, technical delivery code
CZ	CSN 42-1492	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium bars, technical delivery code
CZ	CSN 42-1493	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for seamless titanium tubes, technical delivery code
CZ	CSN 42-4655	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) titanium unalloyed 99.5 %
CZ	CSN 42-7390	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for hot rolled titanium sheets and strips, dimensions
CZ	CSN 42-7391	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for cold rolled titanium sheets, bands, and strips, dimensions
CZ	CSN 42-7490	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium round wires
CZ	CSN 42-7590	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for hot formed titanium bars, dimensions
CZ	CSN 42-7591	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for turned titanium bars, dimensions
CZ	CSN 42-7790	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for seamless titanium tubes, dimensions
CZ	ON 42-1496	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium ingots, delivery code and dimensional standard
CZ	ON 42-4656	00/60	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium ingots

TABLE 1T. CURRENT JAPANESE STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS⁽²⁹⁾

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
JA	JIS H 2551	00/69	Japanese Industrial Standard for titanium sponge
JA	JIS H 2552	00/72	Japanese Industrial Standard for compressed titanium sponge
JA	JIS H 4630	00/75	Japanese Industrial Standard for titanium pipes and tubes for ordinary piping
JA	JIS H 4631	00/75	Japanese Industrial Standard for titanium pipes and tubes for heat exchangers
JA	JIS H 4650	00/75	Japanese Industrial Standard for titanium rods and bars
JA	JIS H 4670	00/75	Japanese Industrial Standard for titanium flat mill products, rod and wire

**TABLE 1U. CURRENT ISO (INTERNATIONAL STANDARDS ORGANIZATION) STANDARD NUMBERS
AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS⁽⁷⁾**

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
XX	Ductile Ti	00/00	ISO(Draft Standard) for surgical implants
XX	Resilient Ti	00/00	ISO(Draft Standard) for surgical implants
XX	Alloy	00/00	ISO(Draft Standard) for surgical implants
XX	ISO/TC 119/SC5	11/74	ISO specifications for powder metallurgy materials (except hard metals) (includes titanium)

**TABLE 1V. CURRENT SPANISH NATIONAL STANDARD NUMBERS AND TITLES COVERING
TITANIUM AND TITANIUM ALLOYS⁽³⁰⁾**

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
SP	INTA L-7001*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for unalloyed titanium, grade 1
SP	INTA L-7002*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for unalloyed titanium, grade 2
SP	INTA L-7003*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for unalloyed titanium, grade 3
SP	INTA L-7004*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for unalloyed titanium, grade 4
SP	INTA L-7021*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for titanium-palladium alloy
SP	INTA L-7101*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for Ti-5Al-2.5Sn alloy
SP	INTA L-7301*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for Ti-6Al-4V alloy
SP	INTA L-7501*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for Ti-2.5Cu alloy
SP	INTA L-7701*	00/76	Instituto Nacional de Tecnica Aeroespacial Standard for Ti-3Al-13V-11Cr alloy

* Proposed specifications.

TABLE 1W. OTHER CURRENT US STANDARDS AND SPECIFICATIONS (NSA-NATIONAL STANDARDS ASSOCIATION; ANSI-AMERICAN NATIONAL STANDARDS INSTITUTE; NATIONAL STOCKPILE PURCHASE SPECIFICATIONS)⁽³⁸⁾

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
US	NSA 2605, 2705, 5260, 1266, 2206, 621, 2325, 2105, 2306, 2315, 2506, 2406, 2005, 2125, 2115, 4004, 6100, 5800, 4304, 6804, 4903, 4600, 6403, 5500, 653	00/75	National Standards Association Series of Specifications for Dimensional Tolerances of a Wide Variety of Titanium and Titanium Alloy Fasteners
US	P-97-R5	08/69	Titanium Metal Sponge (National Stockpile Purchase Specification) Executive Office of the President, Office of Emergency Preparedness
US	ANSI Z179.1	00/74	American National Standard Institute Equivalent of ASTM Specification B265-74
US	ANSI Z179.13	00/74	American National Standard Institute Equivalent of ASTM Specification B299-74
US	ANSI Z179.16	05/73	American National Standard Institute Equivalent of ASTM Specification B367-74
US	ANSI Z179.2	00/74	American National Standard Institute Equivalent of ASTM Specification B344-74
US	ANSI H5091	11/72	American National Standard Institute Equivalent of ASTM Specification B363-71
US	ANSI H50.2	00/74	American National Standard Institute Equivalent of ASTM Specification B338-74

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1. Technical Supply Conditions for Semi-fabricated Products of Titanium and Titanium Alloys, a trilingual publication of the Technical Committee of European Titanium Producers, Imperial Metal Industries Ltd., Birmingham, England; Fried. Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, Germany; Contimet Titanium, Division of Thyssen Edelstahlwerke AG, Krefeld, Germany; and Pechiney Ugine Kuhlman (PUG), Paris, France (1975).
2. Conversion Charts, Data Sheets and Equivalence Lists for American Aircraft Materials, North Atlantic Council, No. AC/82-D/4 part A, NATO, Paris XVIe or Brussels, Belgium.

The most complete lists of roughly similar materials are the NATO AC/82-D/4 publications. The current metals editions are:

- Section I: Aluminum - 3rd Edition (December 1965), (revised 4th edition being reproduced).
- Section II: Steels, Vols. I, II, and III, 4th edition (July 1971).
- Section III: Magnesium - 3rd Edition (December 1966), (due for revision 1975).
- Section IV: Copper - 3rd Edition (December 1964).
- Section V: Nickel - 4th Edition (October 1972).
- Section VI: Protective Surface Treatments - 3rd Edition (December 1968).
- Section VII: Cobalt - 4th Edition (October 1972).
- Section VIII: Lead - 3rd Edition (December 1962).
- Section IX: Titanium - 4th Edition (December 1972), (scheduled for revision).

These nine mentioned sections of the NATO AC/82-D4 publications are good documentation for equivalent information of U.S. and foreign alloys for materials such as aluminum, steel, magnesium, copper, nickel, cobalt, lead, and titanium.

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APPENDIXES

APPENDIX 1. COUNTRY CODE
(Alphabetical by Country)

Ctry Code	Country
AR	Argentina
AT	Australia
AU	Austria
BE	Belgium
BR	Brazil
BU	Bulgaria
CN	Canada
CH	China (Main Land)
CZ	Czechoslovakia
DE	Denmark
EU	Europe
FI	Finland
FR	France
GE	Germany (East)
GY	Germany (West)
GR	Greece
HU	Hungary
IN	India
IT	Italy
JA	Japan
MX	Mexico
NE	Netherlands
NZ	New Zealand
NO	Norway
PO	Poland
PT	Portugal
RU	Rumania
SP	Spain
SW	Sweden
SZ	Switzerland
TW	Taiwan, Formosa
UA	Union of South Africa
UK	United Kingdom
US	United States
UR	USSR (Russia)
XX	World-Wide
YU	Yugoslavia

APPENDIX 2. COMPANY CODE
(Numerical by Company Code)

Company Code	Company Name and City
C-0001	Titanium Metals Corporation of America, Timet Div. (TMCA), Pittsburgh, Pennsylvania
C-0002	Martin Marietta Aluminum, Titanium Division, Torrance, California
C-0003	RMI Company (Formerly Reactive Metals, Inc.), Niles, Ohio
C-0004	Crucible, Inc., Specialty Metals, Colt Industries, Syracuse, New York
C-0005	Armco Steel Corp., Advanced Materials Division (ARMCO), Middletown, Ohio
C-0006	Titech International, Inc. (TITECH), Pomona, California
C-0007	Teledyne Titanium, Inc. (Teledyne Ti), Monroe, New York
C-0008	Teledyne Allvac (ALLVAC), Monroe, North Carolina
C-0009	Oregon Metallurgical Corporation (Ormet), Albany, Oregon
C-0010	Gould Laboratories, Gould, Inc. (Formerly Brush Beryllium Co.), Cleveland, Ohio
C-0011	Republic Steel Corporation, Cleveland, Ohio
C-0012	Harvey Aluminum Co. (Martin Marietta), Torrance, California
C-0013	Imperial Metal Industries, Ltd. (IMI), (KYNOCH), Birmingham, England
C-0014	Imperial Chemical Industries, (See Imperial Metal Industries)
C-0015	Jessop-Saville, Ltd., (Now Imperial Metal Ind.), Birmingham, England
C-0016	Ti Aluminum Co., Ltd., London, England
C-0017	Blackwell's Metallurgical, Ltd., Lancashire, England
C-0018	Kock Light Alloys, Ltd., London, England
C-0019	Krupp Metall-und-Schmiedewerke, Fried. Krupp GmbH, Essen, W. Germany
C-0020	Ugine, Aciers Electriques de Ugine, (Div. of PUG), Savoie, France
C-0021	Avesta Jernverks Aktiebolag, Avesta, Sweden
C-0022	Howmet Corporation, Superalloy Group (Div. of PUG), Muskegon, Michigan
C-0023	Precision Castparts Corporation, Portland, Oregon
C-0024	REM Metals Corporation, Albany, Oregon
C-0025	Tiline, Subsidiary of Whittaker Corporation, Albany, Oregon
C-0026	Osaka Titanium Co., Ltd. (Osaka), Amagasaki, Japan
C-0027	Toho Titanium Co., Ltd. (Toho), Chigasaki Kangawa, Japan
C-0028	Shin Kinyoku (Affiliate of Japanese Chemical Concerns), Japan
C-0029	Titanium-Magnesium Plant, Zaporosh'ye, USSR
C-0030	Titanium-Magnesium Plant, Berezniki, USSR
C-0031	Titanium-Magnesium Plant, Usk' Kamenogorsk, USSR
C-0032	Titanium West, Inc., Reno, Nevada
C-0033	Pechiney-Ugine-Kuhlman (PUG), Paris, France
C-0034	Crucible Materials Research Cen., Colt Industries, Inc., Pittsburgh, Pennsylvania
C-0035	Non-Ferrous International Corporation, New York, New York
C-0036	Nuc. Materials Environment Corp. Div. of Babcock-Wilcox, Pittsburgh, Pennsylvania
C-0037	Nuclear Metals Division of Whittaker Corporation, West Concord, Massachusetts
C-0038	Penn. Nuclear Corporation, Pennsylvania, Pennsylvania
C-0039	Dynamet Technology, Burlington, Massachusetts
C-0040	Welded Carbide Company, Inc., Clifton, New Jersey
C-0041	Mallory-Sharon Titanium Corporation, (Now RMI Company), Niles, Ohio
C-0042	Carpenter Technology Corporation, Reading, Pennsylvania
C-0043	Sandvik Steel Works, Sandviken, Sweden
C-0044	Kobe Steel Co., Ltd., Kobe, Japan

APPENDIX 2. (Continued)

Company	Company Name and City
C-0045	Nippon Stainless Steel Co., (Orig. Sumitomo Light Met. Ind.), Tokyo, Japan
C-0046	Thyssen Edelstahlwerke, AG, Titanium Division. (Contimet), Krefeld, W. Germany
C-0047	Degussa, Frankfurt/Main, W. Germany
C-0048	Contimet GmbH (Now Thyssen Edelstahlwerke Ab, Titanium Division), Krefeld, W. Germany
C-0049	Chicago Development Corporation, Ashland, Virginia
C-0050	Dynamit Nobel AG, Troisdorf, W. Germany
C-0051	Standard Steel (Baldwin-Lime-Hamilton), (Div. of TMCA), Burnham, Pennsylvania
C-0052	Ventron Corporation, Alpha Products, Danvers, Massachusetts
C-0053	G.O. Carlson, Inc., Thorndale, Pennsylvania
C-0054	Otto Fuchs Metallwerke, Meinerzhagen, W. Germany
C-0055	Telydyne, Rodney Metals, New Bedford, Massachusetts
C-0056	H.M. Harper Company, Morton Grove, Illinois
C-0057	Consolidated Astronautics, Inc., Hauppauge, New York
C-0058	Shieldalloy Corp., Newfield, New Jersey
C-0059	Metal Hydrides, Inc., Beverly, Massachusetts
C-0060	Metals Disintegrating Company, Elizabeth, New Jersey
C-0061	Kawecki Berylco Industries, Inc., (Zirconium Tech. Div.), Albany, Oregon
C-0062	Techalloy Co., Inc., Rahns, Pennsylvania
C-0063	Vereinigte Deutsche Metallwerke, AG (VDM), Werdohl, W. Germany
C-0064	Electronics Space Products, Inc., Los Angeles, California
C-0065	Chemalloy Company, Inc., Bryn Mawr, Pennsylvania

APPENDIX 3. COMPANY CODE
(Alphabetical by Company)

Company Code	Company Name and City
C-0005	Armco Steel Corp., Advanced Materials Division (ARMCO), Middletown, Ohio
C-0021	Avesta Jernverks Aktiebolag, Avest, Sweden
C-0017	Blackwell's Metallurgical, Ltd., Lancashire, England
C-0042	Carpenter Technology Corporation, Reading, Pennsylvania
C-0065	Chemalloy Company, Inc., Bryn Mawr, Pennsylvania
C-0049	Chicago Development Corporation, Ashland, Virginia
C-0057	Consolidated Astronautics, Inc., Hauppauge, New York
C-0048	Contimet GmbH (Now Thyssen Edeltstahwerke Ag, Titanium Division), Krefeld, W. Germany
C-0004	Crucible Inc., Specialty Metals, Colt Industries, Syracuse, New York
C-0034	Crucible Materials Research Cen., Colt Industries, Inc., Pittsburgh, Pennsylvania
C-0047	Degussa, Frankfurt/Main, W. Germany
C-0039	Dynamet Technology, Burlington, Massachusetts
C-0050	Dynamit Nobel Ag, Troisdorf, W. Germany
C-0064	Electronics Space Products, Inc., Los Angeles, California
C-0010	Gould Laboratories, Gould Inc., (Formerly Brush Beryllium Co.) Cleveland, Ohio
C-0053	G.O. Carlson Inc., Thorndale, Pennsylvania
C-0012	Harvey Aluminum Co. (Martin Marietta), Torrance, California
C-0022	Howmet Corporation, Superalloy Group (Div. of PUG), Muskegon, Michigan
C-0056	H.M. Harper Company, Morton Grove, Illinois
C-0014	Imperial Chemical Industries, (See Imperial Metal Industries)
C-0013	Imperial Metal Industries, Ltd. (IMI), (KYNOCH), Birmingham, England
C-0015	Jessop-Saville, Ltd., (Now Imperial Metal Industries), Birmingham, England
C-0061	Kawecki Berylco Industries, Inc., (Zirconium Tech. Div.), Albany, Oregon
C-0044	Kobe Steel So., Ltd., Kobe, Japan
C-0018	Kock Light Alloys, Ltd., London, England
C-0019	Krupp Metall-und-Schmiedewerke, Fried, Krupp GmbH, Essen, W. Germany
C-0041	Mallory-Sharon Titanium Corporation, (Now RMI Company), Niles, Ohio
C-0002	Martin Marietta Aluminum, Titanium Division, Torrance, California
C-0060	Metals Disintegrating Company, Elizabeth, New Jersey
C-0059	Metal Hydrides, Inc., Beverly, Massachusetts
C-0045	Nippon Stainless Steel Co., (Orig. Sumitomo Light Met. Ind.), Tokyo, Japan
C-0035	Non-Ferrous International Corporation, New York, New York
C-0037	Nuclear Metals Division of Whittaker Corporation, West Concord, Massachusetts
C-0036	Nuc. Materials Environment Corp., Div. of Babcock-Wilcox, Pittsburgh, Pennsylvania
C-0009	Oregon Metallurgical Corporation (Oremet), Albany, Oregon
C-0026	Osaka Titanium Co., Ltd. (Osaka), Amagasaki, Japan
C-0054	Otto Fuchs Metallwerke, Meinerzhagen, W. Germany
C-0033	Pechiney-Ugine-Kuhlman (PUG), Paris, France
C-0038	Penn. Nuclear Corporation, Pennsylvania, Pennsylvania
C-0023	Precision Castparts Corporation, Portland, Oregon
C-0024	REM Metals Corporation, Albany, Oregon
C-0011	Republic Steel Corporation, Cleveland, Ohio
C-0003	RMI Company (Formerly Reactive Metals, Inc.) Niles, Ohio

APPENDIX 3. (Continued)

Company Code	Company Name and City
C-0043	Sandvik Steel Works, Sandviken, Sweden
C-0058	Shieldalloy Corp., Newfield, New Jersey
C-0028	Shin Kinyoku (Affiliate of Japanese Chemical Concerns), Japan
C-0051	Standard Steel (Baldwin-Lima-Hamilton), (Div. of TMCA), Burnham, Pennsylvania
C-0062	Techalloy Co., Inc., Rahns, Pennsylvania
C-0008	Teledyne Allvac (ALLVAC), Monroe, North Carolina
C-0007	Teledyne Titanium, Inc. (Teledyne Ti), Monroe, North Carolina
C-0055	Telydyne, Rodney Metals, New Bedford, Massachusetts
C-0046	Thyssen Edelstahlwerke Ag, Titanium Div. (Contimet), Krefeld, W. Germany
C-0025	Tiline, Subsidiary of Whittaker Corporation, Albany, Oregon
C-0001	Titanium Metals Corporation of American, Timet Div. (TMCA), Pittsburgh, Pennsylvania
C-0032	Titanium West, Inc., Reno, Nevada
C-0030	Titanium-Magnesium Plant, Berezniki, USSR
C-0031	Titanium-Magnesium Plant, Usk' Kamenogorsk, USSR
C-0029	Titanium-Magnesium Plant, Zaporosh'ye, USSR
C-0006	Titech International, Inc., (Titech), Pomona, California
C-0016	Ti Aluminum Co., Ltd., London, England
C-0027	Toho Titanium Co., Ltd. (Toho), Chigasaki Kangawa, Japan
C-0020	Ugine, Aciers Electriques de Ugine, (Div. of PUG), Savoie, France
C-0052	Ventron Corporation, Alpha Products, Danvers, Massachusetts
C-0063	Vereinigte Deutsche Metallwerke, Ag (VDM), Werdohl, W. Germany
C-0040	Welded Carbide Company, Inc., Clifton, New Jersey

APPENDIX 4. UNIFIED NUMBERING SYSTEM
(Numerical by UNS Number)⁽³⁵⁾

Unified Numbering System (UNS)	Nominal Composition (Computerized Format)	ASTM Grade	Hydrogen Level, ppm
R50250	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	150 ppm hydrogen
R50251	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	125 ppm hydrogen
R50252	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	100 ppm hydrogen
R50400	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	150 ppm hydrogen
R50401	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	125 ppm hydrogen
R50402	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	100 ppm hydrogen
R50550	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	150 ppm hydrogen
R50551	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	125 ppm hydrogen
R50552	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	100 ppm hydrogen
R50700	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	150 ppm hydrogen
R50701	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	125 ppm hydrogen
R50702	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	100 ppm hydrogen
R52250	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	150 ppm hydrogen
R52251	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	125 ppm hydrogen
R52252	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	100 ppm hydrogen
R52253	Ti-Pd0.15--0.20 -25 ksi YS	Grade C8A	B367 casting
R52400	Ti-Pd0.25--0.20 -40 ksi YS	Grade 7	150 ppm hydrogen
R52401	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	125 ppm hydrogen
R52402	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	100 ppm hydrogen
R52403	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	B367, 0.12Pd min
R52552	Ti-Pd0.15--0.20 -55 ksi YS	Grade C8A	-----
R52702	Ti-Pd0.15--0.20 -70 ksi YS	Grade C8B	B367 casting
R54520	Ti-Al5-Sn2.5	Grade 6	200 ppm hydrogen
R54521	Ti-Al5-Sn2.5	Grade 6	125 ppm hydrogen
R54522	Ti-Al5-Sn2.5	Grade 6	100 ppm hydrogen
R54523	Ti-Al5-Sn2.5	Grade 6	IN B381
R56320	Ti-Al3-V2.5	Grade 9	IN B337, B338
R56400	Ti-Al6-V4	Grade 5	150 ppm hydrogen
R56401	Ti-Al6-V4	Grade 5	125 ppm hydrogen
R56402	Ti-Al6-V4	Grade 5	100 ppm hydrogen
R56403	Ti-Al6-V4	Grade 5C	IN B367 at 0.25 O
R58030	Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	200 ppm hydrogen
R58031	Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	150 ppm hydrogen

APPENDIX 5. STANDARD ORGANIZATIONS OF THE WORLD GENERATING TITANIUM AND TITANIUM ALLOY STANDARDS AND SPECIFICATIONS (Alphanumerical by Country)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
CZ	Czechoslovakia	CSN	CSN, ON: Urad Pro Normalizaci a Mereni, Nove Mesto Vlacvske Namesti C. 19, 11347 Praha 1, Czechoslovakia
FR	France	AFNOR	AFNOR, NF: Association Francaise de Normalisation, Tour Europe, Cedex 7, 920800 Paris-La Defense, France
FR	France	AIR	AIR: Ministere des Armees, Repertoire des Reglements AIR. Documents are available from the Center de Documentation de L'Armement (CEDOCAR), 26 BD Victor, 75996, Paris Armees, France
EU FR	Europe France	AECMA	AECMA: Association Europeene Constructeurs de Material Aerospatial, (European Association of Airframe Manufactures), (formerly AICMA: Association Internationale des Constructeurs de Material Aerospatial), BNAE, 8, Rue Moreau Vanthie, 92, Boulogne-Billancourt, Paris, France
GY	W. Germany	DIN	DNA, DIN: Deutscher Normenausschuss, 4-7 Burggrafenstrasse, Postfach 1107, 1 Berlin 30, West Germany
GY	W. Germany	L.W.	L.W.: Luftfahrt Werkstoffe Specifications: (also referred to as Aviation Aircraft Materials). These specifications are also referred to as (WL) Werkstoff-Leistungsblätter der Deutschen Luftfahrt (Material Properties for the German Aviation Industry). These specifications are also referred to as B.W.B. Bundesamt für Wehrtechnik und Beschaffung (BWB), (Federal Defense Engineering and Procurement Department) 5400 Koblenz 1, Postfach 7360, West Germany
GY	W. Germany	VdTUV	VdTUV: Vereinigung der Technischen Überwachungsvereine Ev, (German Association for Technical Supervision), Postfach 1790, Rottstrasse 17, 4300 Essen, West Germany
GE	E. Germany	DIN	DNA, DIN: Deutscher Normenausschuss, 4-7 Burggrafenstrasse, Postfach 1107, 1 Berlin 30, West Germany
UK	United Kingdom	BS	BSI, BS: British Standards Institution, 2 Park Street, London W1A 2BS, England

APPENDIX 5. (Continued)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
UK	United Kingdom	DTD*	DTD: Director of Materials Research and Development, Ministry of Defence, PE (Procurement Executive), St. Giles, Court 1-13 High Street, London, W. C. 2, England
XX	International	ISO	ISO: International Organization for Standardization, 1, Rue de Varembe, 1211 Geneve 20, Switzerland/Suisse
JA	Japan	JIS	JISC, JIS: Japanese Industrial Standards Committee, Agency of Industrial Science and Technology, Ministry of International Trade and Industry, 3-1 Kasumigaseki Chiyodaku, Tokyo, Japan
SP	Spain	INTA	INTA: Instituto Nacional de Tecnica Aeroespacial Paseo Pintor Rosales, 34, Madrid 8, Spain
US	United States	AMS	AMS: Aerospace Material Specification, SAE, Society of Automotive Engineers Inc., 400 Commonwealth Drive, Warrendale, Pa 15096, USA
US	United States	ANSI**	ANSI: American National Standards Institute, 1430 Broadway, New York, NY 10018, USA
US	United States	ASTM	ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa 19103, USA
US	United States	AWS	AWS: American Welding Society, 2501 NW 7th Street, Miami, Fl 33125, USA
US	United States	MIL	MIL: US Military Specifications, Engineering Specifications and Standards Divisions Naval Air Engineering Center, Philadelphia, Pa 19112 USA
US	United States	NBS***	NBS: National Bureau of Standards, US Department of Commerce, Gaithersburg, Md 20234 USA
US	United States	NSA	NSA: National Standards Association, 1321 14th Street, NW, Washington, DC 20005 USA
US	United States	US	National Stockpile Purchase Specification, Executive Office of the President, Office of Emergency Preparedness, Specification Prepared and Issued by the Office of Industrial Materials Business and Defense Services Administration Department of Commerce, Between Constitution Avenue and E Street NW, Washington DC 20230 USA
UR	USSR	AMTU	AMTU: Aviation Metallurgical Specifications, address unconfirmed
UR	USSR	GOST	GOST: Gosudarstvennyi Komitet Standartov (State Standards) mer Izmeritel NYH Priborov PRI, 38 Kvartal Jugozapada, Lorus 189-A, Pmoskva V-421, USSR

APPENDIX 5. (Continued)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
UR	USSR	OST1.	OST1.: Industrial Standards, address unconfirmed
UR	USSR	STU	STU: Technical Specifications of a Sovnakhov, address unconfirmed
UR	USSR	TU	TU: Technical Specifications, address unconfirmed

* DTD: Director of Materials Research and Development, Ministry of Defence, (previously known as Ministry of Aviation and then later the Ministry of Technology), DTD formerly generated the majority of the Titanium Standards in UK, now the UK Titanium Standards are essentially the responsibility of the British Standards Institute (Aerospace Series).

** ANSI: American National Standards Institute an ISO Member is the centralized and sole agency in the US for the sale and distribution of the National Standards of the World.

*** NBS: National Bureau of Standards (Standards Library), is the centralized US repository, for reference purposes, of the National Standards of the World.

**APPENDIX 6. NONCURRENT NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS
WITH TITLES (Alphanumerical by Country and by National Standards)**

Ctry Code	Standard Number	Date Mo.Yr	Title of Standard
UK	BS TA 17	12.68	Aerospace series specifications for titanium-aluminium-tin alloy forgings, (tensile strength 79-108 HBar), (max. section 150mm).
UK	BS TA 29	00.68	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining, (tensile strength 114-136 HBar), (max. section 25mm).
UK	BS TA 30	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forging stock, (tensile strength 114-136 HBar), (max. section 25mm), (partially supersedes DTD 5103).
UK	BS TA 31	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forgings, (tensile strength 114-136 HBar), (max. section 25mm), (partially supersedes DTD 5153).
UK	BS TA 32	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy for machining, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5103).
UK	BS TA 33	07.69	Aerospace series specifications for titanium-aluminium-tin-silicon alloy forging stock, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5103).
UK	BS TA 34	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forgings, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5153).
UK	BS TA 35	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD 5103).

APPENDIX 6. (Continued)

Ctry Code	Standard Number	Date Mo.Yr	Title of Standard
UK	BS TA 36	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forging stock, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD 5103).
UK	BS TA 37	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-silicon alloy forgings, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD F153).
UR	AMTU 388	00.68	Soviet aviation metallurgical specifications for chemical composition of titanium alloys.
US	AMS 4923A	03.66	Aerospace material specifications for titanium alloy bars and forgings; Ti-2Cr-2Fe-2Mo, annealed-120,000 psi yield.
US	AMS 4925B	03.66	Aerospace material specifications for titanium alloy bars and forgings; Ti-4Al-4Mn, annealed-130,000 psi yield.
US	AMS 4927	07.56	Aerospace material specifications for titanium alloy bars and forgings; Ti-5Cr-3Al.
US	AMS 4929 (* Cancelled)	08.58	Aerospace material specifications for titanium alloy bars \leq Ti-5.4Al-1.4Cr-1.3Fe-1.25Mo, annealed-135,000 psi yield.
US	AMS 4968A (* Cancelled)	03.66	Aerospace material specifications for titanium alloy bars and forgings; Ti-5Zr-5Al-5Sn annealed.
US	AMS 4969 (* Cancelled)	01.59	Aerospace material specifications for titanium alloy forgings; Ti-4Al-a.4Cr-1.3Fe-1.25Mo, annealed-135,000 psi yield.
US	ASTM B382-64	00.64	ASTM standard specifications for titanium and titanium alloy bare welding rods and electrodes; discontinued in 1969, see AWS A5.16-70.
US	MIL-T-009046G	10.70	U.S. Military specification, titanium alloy, alpha+beta, sheet, strip, and plate.
US	MIL-T-12118A	05.65	U.S. Military specification, titanium sponge.

APPENDIX 7. NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS WITH THE CORRESPONDING NOMINAL COMPOSITIONS (Alphanumerical by National Standards)

Standard Number	Related/Alloy Common Name	Ctry Code	Nominal Composition Wt % and Form
AECMA Ti-P.01	(IMI-115)	EU	Ti-unalloyed-99.6,CP,-25 ksi YS (all forms)
AECMA Ti-P.02	(IMI-125)	EU	Ti-unalloyed-99.5,CP,-40 ksi YS (all forms)
AECMA Ti-P.04	(IMI-155/160)	EU	Ti-unalloyed-99.0,CP,-70 ksi YS (all forms)
AECMA Ti-P.05	(IMI-130)	EU	Ti-unalloyed-99.2,CP,-55 ksi YS (rivet wire)
AECMA Ti-P.11	(IMI-230)	EU	Ti-Cu2.5 (all forms, annealed and heat treated)
AECMA Ti-P.62	(IMI-314)	EU	Ti-Al4-Mn4 (bar, forging)
AECMA Ti-P.63	(IMI-318)	EU	Ti-Al6-V4 (bar, forging, annealed, sheet)
AECMA Ti-P.64	(6-6-2)	EU	Ti-Al6-V6-Sn2 (bar, forging, annealed and heat treated)
AECMA Ti-P.65	(IMI-317)	EU	Ti-Al5-Sn2.5 (bar, forging)
AECMA Ti-P.66	(8-1-1)	EU	Ti-Al8-V1-Mo1 (bar, forging)
AECMA Ti-P.67	(IMI-685)	EU	Ti-Al6-Mo0.5-Zr5-Si0.3 (bar, forging)
AECMA Ti-P.68	(IMI-550)	EU	Ti-Al4-Mo4-Sn2-Si0.2 (bar, forging)
AIR T-D11ZR6E4	(Beta III)	FR	Ti-Mo 11.5-Sn4.5-Zr6
AIR T-D8C6DZRA	(Beta C)	FR	Ti-Al3-V8-Mo4-Zr4-Cr6
AIR T-A4DE2	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A4DE	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A5E	(A-110)	FR	Ti-Al5-Sn2.5
AIR T-A6VE	(6-6-2)	FR	Ti-Al6-V6-Sn2
AIR T-A6ZD	(IMI-685)	FR	Ti-Al6-Mo0.8-Zr5-Si0.25
AIR T-A7D	(7-4)	FR	Ti-Al7-Mo4
AIR T-A8DV	(8-1-1)	FR	Ti-Al8-V1-Mo1
AIR T-E11D4E	(IMI-680)	FR	Ti-Al2.25-Mo4-Sn 11-Si0.2
AIR T-TU2	(IMI-230)	FR	Ti-Cu2.5
AIR-9182 T-35	(IMI-115)	FR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
AIR-9182 T-40	(IMI-125)	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AIR-9182 T-50	(IMI-130)	FR	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
AIR-9182 T-60	(IMI-160)	FR	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet)
AIR-9183 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bar, rod, forging)
AIR-9183 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bar, rod, forging)

APPENDIX 7. (Continued)

Standard Number	Related/Alloy	Ctry	Nominal Composition Wt % and Form
AIR-9184 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bolts, fasteners)
AIR-9184 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bolts, fasteners)
AMI 10(*2)	(IMI-694 alloy)	US	Ti-Al6-Zr5-W1-Si0.2
AMI 17(*2)	(Ti-6Al-2Cu-1Ta)	US	Ti-Al6-Mo1-Cb/Nb2-Ta1
AMS 4900D	(A55.65A)(grade 3)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)(annealed)
AMS 4901E	(A70.75A)(grade 4)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)(annealed)
AMS 4902B	(A40.55A)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)(annealed)
AMS 4906	(6-4)	US	Ti-Al6-V4 (sheet, strip)(cont. rolled and annealed)
AMS 4907C	(6-4)ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)(annealed)
AMS 4908C	(C-110M)	US	Ti-Mn8 (sheet, strip)(annealed)
AMS 4909C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)(annealed)
AMS 4910F	(A110AT)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)(annealed)
AMS 4911C	(C120AV)(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)(annealed)
AMS 4912A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution heat treated)
AMS 4913A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution and precipitation tr.)
AMS 4915C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(single annealed)
AMS 4916C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(duplex annealed)
AMS 4917B	(B120VCA)	US	Ti-Al3-V 13.5-Cr 11 (sheet, strip, plate)(solution heat treated)
AMS 4918D	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)(annealed)
AMS 4921C	(A70,100A)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging, rod)(annealed)
AMS 4923A(*1)		US	Ti-Mo2-Cr2-Fe2 (bar, forging)(annealed)
AMS 4924C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging, rod)(annealed)
AMS 4925B(*2)	(C130M)	US	Ti-Al4-Mn4 (bar, forging)(annealed)
AMS 4926E	(A110AT)	US	Ti-Al5-Sn2.5 (bar, rod)(annealed)
AMS 4927(*1)		US	Ti-Al3-Cr5 (bar, forging, forging stock)
AMS 4928G	(C120AV)(6-4)	US	Ti-Al6-V4 (bar, forging)(annealed)
AMS 4929(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (bar)(annealed)
AMS 4930A	(6-4)ELI	US	Ti-Al6-V4 ELI (bar, forging, rod)(annealed)
AMS 4934	(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(solution treated/aged)
AMS 4935C	(C120AV)(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(annealed)
AMS 4936	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMS 4941A	(A40.55A)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (welding tubing)(annealed)
AMS 4942A	(CP)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless tubing)(annealed)
AMS 4943	(3-2.5)	US	Ti-Al3-V2.5 (seamless tubing)(annealed)
AMS 4944	(3-2.5)	US	Ti-Al3-V2.5 (seamless hydraulic tubing)(cold worked) (stress relieved)
AMS 4951C	(CP)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (welding wire)
AMS 4953	(A110AT)	US	Ti-Al5-Sn2.5 (welding wire)
AMS 4954B	(C120AV)	US	Ti-Al6-V4 (welding wire)
AMS 4955	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding wire)
AMS 4956	(6-4)ELI	US	Ti-Al6-V4 ELI (welding wire)(environment controlled)
AMS 4965C	(6-4)	US	Ti-Al6-V4 (bar, forging, rod)(sol. and precipitation heat tr.)
AMS 4966E	(A110AT)	US	Ti-Al5-Sn2.5 (forging)(annealed)
AMS 4967D	(6-4)	US	Ti-Al6-V4 (forging, bar)(annealed) heat treatable
AMS 4968A(*1)		US	Ti-Al5-Sn2-Zr5 (bar, forging)(annealed)
AMS 4969(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (forging stock, forging)(annealed)
AMS 4970C	(7-4)	US	Ti-Al7-Mo4 (bar, forging)(sol. and precipitation treated)
AMS 4971A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed, heat treatable)
AMS 4972A	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, rod)(solution treated and stabilized)
AMS 4973A	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging)(solution treated and stabilized)
AMS 4974		US	Ti-Al2.30Mo1-Sn 11-Zr5-Si0.2 (bar, forging)(sol. and prec. tr.)
AMS 4975B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, rod)(sol. and precipitation treated)
AMS 4976	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging)(sol. and precipitation treated)
AMS 4977A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4978A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed)
AMS 4979	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(sol. and precipitation tr.)
AMS 4980A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4981	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, wire, forging, forging stock) (solution and precipitation treated)
AMS 4982		US	Ti-Cb/Nb 45 (bar, wire)(annealed)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMTU 368(*1)		UR	Titanium, stampings and fittings
AMTU 386-59		UR	Titanium tubing
AMTU 388(*1)		UR	Titanium alloys, grades
AMTU 449(*1)		UR	Titanium welding wire
AMTU 451-59		UR	Titanium, rolled
AMTU 451-67		UR	Ti-Al4.25-Mn1.4 (bar)
AMTU 451-67		UR	Ti-Al0.8-Mn0.75 (bar)
AMTU 451-67		UR	Ti-Al1.75-Mn1.35 (bar)
AMTU 451-67		UR	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
AMTU 451-67		UR	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
AMTU 451-67		UR	Ti-Al6.25-Mo2.5-Cr1.5 (bar)
AMTU 451-67		UR	Ti-Al5.25 (bar)
AMTU 451-67		UR	Ti-Al5-Sn2.5 (bar)
AMTU 451-67		UR	Ti-Al5.75-V4 (bar)
AMTU 451-67		UR	Ti-Al6.25-V5.1 (bar)
AMTU 451-67		UR	Ti-Al6.65-Mo3.3 (bar)
AMTU 451-67		UR	Ti-Al6.4-Mo3.3-Zr1.4 (bar)
AMTU 451-67		UR	Ti-Al4.9-V1.4-Mo3.65 (bar)
AMTU 451-67		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (bar)
AMTU 451-67		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (bar)
AMTU 461-70		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
AMTU 475-67		UR	Ti-Al4.25-Mn1.4 (sheet)
AMTU 475-67		UR	Ti-Al0.8-Mn0.75 (sheet)
AMTU 475-67		UR	Ti-Al1.75-Mn1.35 (sheet)
AMTU 475-67		UR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
AMTU 475-67		UR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AMTU 475-67		UR	Ti-Al5.25 (sheet)
AMTU 475-67		UR	Ti-Al5.75-V4 (sheet)
AMTU 475-67		UR	Ti-Al6.25-V5.1 (sheet)
AMTU 475-67		UR	Ti-Al4.9-V1.4-Mo3.65 (sheet)
AMTU 475-67		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (sheet)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMTU 476-61		UR	Titanium, sheet, mechanical properties
AMTU 487-20		UR	Titanium extruded and rolled
AMTU 552-69	VT16	UR	Ti-Al2.3-V4.5-Mo5 (bar for fasteners)
AMTU 553-63	VT3-1	UR	Ti-Al6.25-Mo2.5-Cr1.5 (ground bar for fasteners)
AMTU 553-63	VT16	UR	Ti-Al2.3-V4.5-Mo5 (ground bar for fasteners)
ANS H50.1		US	ANS titanium specification equivalent to ASTM B363-71
ANS H50.2		US	ANS titanium specification equivalent to ASTM B338-74
ANS Z179.13		US	ANS titanium specification equivalent to ASTM B299-74
ANS Z179.16		US	ANS titanium specification equivalent to ASTM B367-69(74)
ANS Z179.1		US	ANS titanium specification equivalent to ASTM B265-74
ANS Z179.2		US	ANS titanium specification equivalent to ASTM B348-74
ASTM B265-74	grade 1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 5	US	Ti-Al6-V4 (sheet, strip, plate)
ASTM B265-74	grade 6	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
ASTM B265-74	grade 7	US	Ti-Pd0.15-0.25 (sheet, strip, plate)
ASTM B265-74	grade 10	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
ASTM B265-74	grade 11	US	Ti-Pd0.15-0.25 (sheet, strip, plate)
ASTM B299-74	GP-1	US	Ti-unalloyed-99.+ (sponge)
ASTM B299-74	MD-120	US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74	ML-120	US	Ti-unalloyed-99.1 (sponge)
ASTM B299-74	SL-120	US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74	Ti sponge	US	Ti-unalloyed (sponge), four grades
ASTM B337-74	grade 1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless welding pipe)
ASTM B337-74	grade 2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless welding pipe)
ASTM B337-74	grade 3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless welding pipe)
ASTM B337-74	grade 7	US	Ti-Pd0.15-0.25 (seamless welding pipe)
ASTM B337-74	grade 9	US	Ti-Al3-V2.5 (seamless welding pipe)
ASTM B337-74	grade 10	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless welding pipe)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B337-74	grade 11	US	Ti-Pd0.15-0.25 (seamless welding pipe)
ASTM B338-74	grade 1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless welding pipe)
ASTM B338-74	grade 2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless weld. heat exch.)
ASTM B338-74	grade 3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless weld. heat exch.)
ASTM B338-74	grade 7	US	Ti-Pd0.15-0.25 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 9	US	Ti-Al3-V2.5 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 10	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 11	US	Ti-Pd0.15-0.25 (seamless weld. heat exchanger tubing)
ASTM B348-74	grade 1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (billet, bar)
ASTM B348-74	grade 2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (billet, bar)
ASTM B348-74	grade 3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (billet, bar)
ASTM B348-74	grade 4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (billet, bar)
ASTM B348-74	grade 5	US	Ti-Al6-V4 (billet, bar)
ASTM B348-74	grade 6	US	Ti-Al5-Sn2.5 (billet, bar)
ASTM B348-74	grade 7	US	Ti-Pd0.15-0.25 (billet, bar)
ASTM B348-74	grade 10	US	Ti-Mo 1.5-Sn4.5-Zr6 (billet, bar)
ASTM B348-74	grade 11	US	Ti-Pd0.15-0.25 (billet, bar)
ASTM B363-71	grade WPT1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (fittings-welding/seamless)
ASTM B363-71	grade WPT2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (fittings-welding/seamless)
ASTM B363-71	grade WPT3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (fittings-welding/seamless)
ASTM B367-69	grade C-1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (casting)
ASTM B367-69	grade C-2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (casting)
ASTM B367-69	grade C-3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (casting)
ASTM B367-69	grade C-4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (casting)
ASTM B367-69	grade C-5	US	Ti-Al6-V4 (casting)
ASTM B367-69	grade C-6	US	Ti-Al5-Sn2.5 (casting)
ASTM B367-69	grade C-7A	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69	grade C-7B	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69	grade C-8A	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69	grade C-8B	US	Ti-Pd0.15-0.25 (casting)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B381-75	grade F-1	US	Ti-unalloyed-99.6,CP,-25 ksi YS (forging)
ASTM B381-75	grade F-2	US	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)
ASTM B381-75	grade F-3	US	Ti-unalloyed-99.2,CP,-55 ksi YS (forging)
ASTM B381-75	grade F-4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)
ASTM B381-75	grade F-5	US	Ti-Al6-V4 (forging)
ASTM B381-75	grade F-6	US	Ti-Al5-Sn2.5 (forging)
ASTM B381-75	grade F-7	US	Ti-Pd0.15-0.25 (forging)
ASTM B381-75	grade F-11	US	Ti-Pd0.15-0.25 (forging)
ASTM F136-70		US	Ti-Al6-V4 ELI (sheet, bar, forging)(surgical implants)
ASTM F67-74	grade 3	US	Ti-unalloyed-99.3,CP,-50 ksi YS (sheet, forging)(surgical impl.)
ASTM F67-74	grade 4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, forging)(surgical impl.)
AWS A5.16-70	ERTI-0.2Pd	US	Ti-Pd0.15-0.25 (bare welding rods)
AWS A5.16-70	ERTI-13V-11Cr-3	US	Ti-Al3-V 13-Cr 11 (bare welding rods)
AWS A5.16-70	ERTI-1	US	Ti-unalloyed-99.7,CP,- ksi YS (welding wire)
AWS A5.16-70	ERTI-2	US	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
AWS A5.16-70	ERTI-3Al-2.5V	US	Ti-Al3-V2.5 (bare welding rods)
AWS A5.16-70	ERTI-3Al-2.5V-1	US	Ti-Al3-V2.5 (very-high-purity compositions)(bare wire)
AWS A5.16-70	ERTI-3	US	Ti-unalloyed-99.6,CP,-25 ksi YS (bare wire)
AWS A5.16-70	ERTI-4	US	Ti-unalloyed-99.4,CP,- ksi YS (bare wire)
AWS A5.16-70	ERTI-5Al-2.5Sn	US	Ti-Al5-Sn2.5 (bare welding rods)
AWS A5.16-70	ERTI-5Al-2.5Sn	US	Ti-Al5-Sn2.5 (very-high-purity compositions)
AWS 5.16-70	ERTI-6Al-2Cb-1	US	Ti-Al6-Mo1-Cb/Nb2-Ta1 (bare welding rods)
AWS 5.16-70	ERTI-6Al-4V	US	Ti-Al6-V4 (bare welding rods)
AWS 5.16-70	ERTI-6Al-4V-1	US	Ti-Al6-V4 (very-high-purity compositions)(bare wire)
AWS 5.16-70	ERTI-8Al-1Mo-1V	US	Ti-Al8-V1-Mo1 (bare welding rods)
BS CP 3003(part 9)grade 1		UK	Ti-unalloyed-99.6,CP,-25 ksi YS (for chemical linings)
BS TA.1	(see 2TA.1)	UK	Ti-Pd0.15-0.25
BS TA.10(*1)	(see 2TA.10)	UK	Ti-Al6-V4 (sheet)
BS TA.11(*1)	(see 2TA.11)	UK	Ti-Al6-V4 (bar for machining)
BS TA.12(*1)	(see 2TA.12)	UK	Ti-Al6-V4 (forging stock)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.13(*1)	(IMI-318)	UK	Ti-Al6-V4 (forging)
BS TA.14(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
BS TA.15(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (bar for machining)
BS TA.16(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (forging stock)
BS TA.17(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (forging)
BS TA.18	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.19	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging stock)
BS TA.20	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.21(*1)	(IMI-230)	UK	Ti-Cu2.5
BS TA.22(*1)	(IMI-230)	UK	Ti-Ci2.5
BS TA.23(*1)	(IMI-230)	UK	Ti-Cu2.5
BS TA.24(*1)	(IMI-230)	UK	Ti-Cu2.5
BS TA.25	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.26	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.27	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.28(*1)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS TA.29(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.30(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.31(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.32(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.33(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.34(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.35(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.36(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.37(*1)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.38	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (bar for machining)(heat treated)
BS TA.39	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging stock)
BS TA.40	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (bar for machining)(heat treated)
BS TA.41	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging stock)
BS TA.42	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging)(heat treated)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.43	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging stock)
BS TA.44	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging)(heat treated)
BS TA.45	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)(heat treated)
BS TA.46	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.47	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.48	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.49	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.50	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.51	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.52	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(solution heat treated and aged)
BS TA.53	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
BS TA.54	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS TA.55	(IMI-230)	UK	Ti-Cu.25 (forging)(solution heat treated and aged)
BS TA.56	(IMI-318)	UK	Ti-Al6-V4 (plate)(annealed)
BS TA.57	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (plate)(heat treated)
BS TA.58	(IMI-230)	UK	Ti-Cu2.5 (plate)(annealed)
BS 2TA.1	(IMI-115/260)	UK	Ti-unalloyed-99.6,CP,25 ksi YS (sheet, strip)(annealed)
BS 2TA.2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,40 ksi YS (sheet, strip)(annealed)
BS 2TA.3	(IMI-125)	UK	Ti-unalloyed-99.5,CP,40 ksi YS (bar for mach.)(annealed)
BS 2TA.4	(IMI-125)	UK	Ti-unalloyed-99.5,CP,40 ksi YS (forging stock)
BS 2TA.5	(IMI-125)	UK	Ti-unalloyed-99.5,CP,40 ksi YS (forging)(annealed)
BS 2TA.6	(IMI-155)	UK	Ti-unalloyed-99.0,CP,70 ksi YS (sheet, strip)(annealed)
BS 2TA.7	(IMI-160)	UK	Ti-unalloyed-99.0,CP,70 ksi YS (bar for mach.)(annealed)
BS 2TA.8	(IMI-160)	UK	Ti-unalloyed-99.0,CP,70 ksi YS (forging stock)
BS 2TA.9	(IMI-160)	UK	Ti-unalloyed-99.0,CP,70 ksi YS (forging)(annealed)
BS 2TA.10	(IMI-318)	UK	Ti-Al6-V4 (sheet, strip)(annealed)
BS 2TA.11	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)(annealed)
BS 2TA.12	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.13	(IMI-318)	UK	Ti-Al6-V4 (forging)(annealed)
BS 2TA.21	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(annealed)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS 2TA.22	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)(annealed)
BS 2TA.23	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS 2TA.24	(IMI-230)	UK	Ti-Cu2.5 (forging)(annealed)
BS 2TA.28	(IMI-318)	UK	Ti-Al6-V4 (forging stock, wire)(fasteners)
BS 2TA.100		UK	Inspection and testing of titanium alloys
BS 3003(part 9) grade 2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (for chemical linings)
BS 3003(part 9) grade 3	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (for chemical linings)
BS 3003(part 9) grade 4	(IMI-155)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
BS 3003(part 9) grade 5	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
NS 3003(part 9) TP.1	(Pd alloy)	UK	Ti-Pd0.15-0.25
BS 3531/1.5	(IMI-115,125,130)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
CSN 42 1490		CZ	Ti-unalloyed-99.5,CP (dimensions)(sheet, strip)
CSN 42 1491		CZ	Ti-unalloyed-99.5,CP,-40 ksi US (wire)
CSN 42 1492		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
CSN 42 1493		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (tubing)
CSN 42 4655		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
CSN 42 7390		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(sheet, strip)
CSN 42 7391		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(sheet, strip)
CSN 42 7490		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
CSN 42 7590		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar)
CSN 42 7591		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar for mach.)
CSN 42 7790		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(tubing)
DIN 17850		GY	Ti-unalloyed-99.+CP, all grades
DIN 17851	(6-4)(A-110)	GY	Ti-Al6-V4 and Ti-Al5-Sn2 (extrusion)(annealed)
DIN 17860	(CP)	GY	Ti-unalloyed-99.+CP, all grades (sheet, strip)
DIN 17862	(CP)	GY	Ti-unalloyed-99.+CP, all grades (bar)(annealed)
DIN 17863	(CP)	GY	Ti-unalloyed-99.+CP, all grades (wire)(annealed)
DIN 17864	(CP)	GY	Ti-unalloyed, Ti-Al6-V4, Ti-Al5-Sn2 (forging)(annealed)
DIN 3.7025 Werkstoff	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS
DIN 3.7030(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DIN 3.7035 Werkstoff	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS
DIN 3.7040(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
DIN 3.7055 Werkstoff	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS
DIN 3.7056(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
DIN 3.7065 Werkstoff	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS
DIN 3.7070(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
DIN 3.7115 Werkstoff	(A-110)	GY	Ti-Al5-Sn2.5 (all forms)
DIN 3.7165 Werkstoff	(6-4)	GY	Ti-Al6-V4 (all forms)
DTD 5273 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5283 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
DTD 5333	(IMI-550)	UK	Ti-Al4-Mn4 (bar for machining)
DTD 5333	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock to 100 mm)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mn4 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mn4 (forging)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging to 100 mm)
DTD M200(*1)		UK	Ti-Al6-Zr5-W1-Si0.3
DTD M201(*1)		UK	Ti-Al6-Mo4-Zr5-Cu1-Si0.2
DTD 5003B(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 5013B(*1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 5023C(*1)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
DTD 5033B(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
DTD 5043B(*1)	(IMI-315)	UK	Ti-Al2-Mn2 (bar)
DTD 5053(*1)	(IMI-550)	UK	Ti-Al4-Mn4 (bar)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5054B(*1)		UK	Ti-Al11.5-Mn1.5 (bar)
DTD 5063A(*1)		UK	Ti-unalloyed-99.7, CP (sheet)
DTD 5073(*1)		UK	Ti-unalloyed-99.7, CP, C0.1, Fe0.2
DTD 5083(*1)	(see TA.15)	UK	Ti-Al5-Sn2.5 (bar)
DTD 5093(*1)	(see TA.14)	UK	Ti-Al5-Sn2.5 (sheet)
DTD 5103(*1)	(see TA.35,296)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)
DTD 5113(*1)		UK	Ti-Al2.2-Mo1-Sn 11-Zr5-Si0.4 (bar)
DTD 5123(*1)		UK	Ti-Cu2.5 (bar)
DTD 5133(*1)		UK	Ti-Cu2.5 (sheet)
DTD 5143(*1)		UK	Ti-Al4-Mn4 (forging)
DTD 5153(*1)	(see TA.31,34)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
DTD 5163(*1)	(see 2TA.10)	UK	Ti-Al6-V4 (sheet)
DTD 5173(*1)	(see 2TA.11)	UK	Ti-Al6-V4 (bar)
DTD 5183(*1)		UK	Ti-unalloyed (sheet, strip)
DTD 5193(*1)		UK	Ti-unalloyed (sheet, strip)
DTD 5203(*1)	(see TA.38)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (billet, bar)
DTD 5213(*1)		UK	Ti-Al2.25-Mo4-Sn 11-Si0.2 (bar)
DTD 5223(*1)	(see TA.42)	UK	Ti-Al4-Mo4-Sn4-Si0.5 (forging)
DTD 5233(*1)	(see TA.52)	UK	Ti-Cu2.5 (sheet, strip)
DTD 5243(*1)	(see TA.53)	UK	Ti-Cu2.5 (bar for machining)
DTD 5253(*1)	(see TA.54)	UK	Ti-Cu2.5 (forging stock)
DTD 5263(*1)	(see TA.55)	UK	Ti-Cu2.5 (forging)
DTD 5273		UK	Ti-unalloyed-99.2, CP, -55 ksi YS (bar for machining)
DTD 5283		UK	Ti-unalloyed-99.2, CP, -55 ksi YS (forging stock)
EMO Ti-110	(B348 grade 1)	GE	Ti-unalloyed-99.6, CP, -25 ksi YS
EMO Ti-140	(B348 grade 2)	GE	Ti-unalloyed-99.5, CP, -40 ksi YS
GOST 5303-69		UR	Ti-unalloyed sponge, quality requirements
INTA L-7001(*5)		SP	Ti-unalloyed
INTA L-7002(*5)		SP	Ti-unalloyed
INTA L-7003(*5)		SP	Ti-unalloyed

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
INTA L-7004(*5)		SP	Ti-unalloyed
INTA L-7021(*5)	(Pd alloy)	SP	Ti-Pd0.12-0.25
INTA L-7301(*5)	(6-4)	SP	Ti-Al6-V4
INTA L-7501(*5)	(IMI-230)	SP	Ti-Cu2.5
INTA L-7701(*5)	(13-11-3)	SP	Ti-Al3-V 13-Cr 11
ISO Draft Std.(alloy)	(IMI-318)	XX	Ti-Al6-V4 (surgical implant)
ISO Draft Std.(ductile Ti)	(IMI-115)	XX	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
ISO Draft Std.(resilient Ti)	(IMI-155,160)	XX	Ti-unalloyed-99.0,CP,-70 ksi YS (surgical implant)
ISO T119/SC5		XX	Titanium (powder)
JIS H 2151 class 1		JA	Ti-unalloyed-99.6 (sponge)
JIS H 4600 class 1		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
JIS H 4600 class 2		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)
JIS H 4600 class 3		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (plate)
JIS H 4630 class 1		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (ordinary pipe)
JIS H 4630 class 2		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (ordinary pipe)
JIS H 4630 class 3		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (ordinary pipe)
JIS H 4631 class 1		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (heat exchanger tubing)
JIS H 4631 class 2		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (heat exchanger tubing)
JIS H 4631 class 3		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (heat exchanger tubing)
JIS H 4650 class 1		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
JIS H 4650 class 2		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
JIS H 4650 class 3		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (bar)
JIS H 4670 class 1		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (wire)
JIS H 4670 class 2		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
JIS H 4670 class 3		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (wire)
LW 3.7024.1 (Werkstoff)	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, welding wire)
LW 3.7034.1 (Werkstoff)	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, rod, forging, weld. w)
LW 3.7064.1 (Werkstoff)	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, rod, forging)
LW 3.7114 (draft)	(IMI-317)	GY	Ti-Al5-Sn2.5 (all forms)
LW 3.7124 (draft)	(IMI-230)	GY	Ti-Cu2.5 (all forms)
I.W 3.7134 Werkstoff	(8-1-1)	GY	Ti-Al8-V1-Mo1

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
LW 3.7144 Werkstoff	(6-2-4-2)	GY	Ti-Al6-Mo2-Sn2-Zr4
LW 3.7154 Werkstoff	(IMI-685)	GY	Ti-Al6-Mo0.8-Zr5-Si0.3
LW 3.7154 (draft)	(IMI-685)	GY	Ti-Al6-Mo0.5-Zr5-Si0.25 (bar, billet)
LW 3.7164 Werkstoff	(6-4)	GY	Ti-Al6-V4
LW 3.7164.1 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (sheet, rod, forging)
LW 3.7164.7 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (bolt stock)
LW 3.7174 Werkstoff	(6-6-2)	GY	Ti-Al6-V6-Sn2
LW 3.7184 (draft)	(IMI-550)	GY	Ti-Al4-Mo4-Sn2-Si0.5 (bar, billet)
L-7101	(A-110)	SP	Ti-Al5-Sn2.5
MIL-F-83142A composition 1		US	Ti-unalloyed-99.9,CP,-70 ksi YS (forging premium quality)
MIL-F-83142A composition 2	(A-110)	US	Ti-Al5-Sn2.5 (forging premium quality)
MIL-F-83142A composition 3	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (forging premium quality)
MIL-F-83142A composition 4		US	Ti-Al5-Sn5-Zr5 (not used) (forging premium quality)
MIL-F-83142A composition 5	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging premium quality)
MIL-F-83142A composition 6	(6-4)	US	Ti-Al6-V4 (forging premium quality)
MIL-F-83142A composition 7	(6-4) ELI	US	Ti-Al6-V4 ELI (forging premium quality)
MIL-F-83142A composition 8	(6-6-2)	US	Ti-Al6-V6-Sn2 (forging premium quality)
MIL-F-83142A composition 9	(7-4)	US	Ti-Al7-Mo4 (forging premium quality)
MIL-F-83142A composition 10	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (forging premium quality)
MIL-F-83142A composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging premium quality)
MIL-F-81342A composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (forging premium quality)
MIL-F-83142A composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (forging premium quality)
MIL-HDBK-697A		US	Ti and Ti alloys, US Military Handbook
MIL-H-81200A		US	Ti-unalloyed and alloyed, heat treatment
MIL-R-81558 type III alpha+beta		US	Ti-alpha+beta alloys (welding rod wire)
MIL-R-81558 type III composition A	(6-4)	US	Ti-Al6-V4 (welding rod wire)
MIL-R-81558 type III composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (welding rod wire)
MIL-R-81558 type II alpha alloys		US	Ti-alpha alloys (welding rod wire)
MIL-R-81558 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (welding rod wire)
MIL-R-81558 type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (welding rod wire)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-R-81558 type II composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding rod wire)
MIL-R-81558 type II composition D	(6-6-2-1)	US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (welding rod wire)
MIL-R-81558 type IV beta alloys		US	Ti-beta alloys (welding rod wire)
MIL-R-81558 type IV composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (welding rod wire)
MIL-R-81558 type I composition A	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod wire)
MIL-R-81558 type I composition B	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod wire)
MIL-R-81558 type I CP Titanium	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod wire)
MIL-T-009046G composition 6(*3)	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-009046G composition 7(*3)	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-009046G composition 8(*3)	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-009046G composition 11(*3)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-009047F composition 1(*4)		US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging stock)
MIL-T-009047F composition 2(*4)	(A-110)	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-009047F composition 3(*4)	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-T-009047F composition 5(*4)	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-009047F composition 6(*4)	(6-4)	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-009047F composition 7(*4)	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-009047F composition 8(*4)	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-009047F composition 9(*4)	(7-4)	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-009047F composition 10(*4)	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-T-009047F composition 11(*4)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-T-009047F composition 12(*4)	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-T-009047F composition 13(*4)	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-T-009047F composition 14(*4)	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-12118A(*1)		US	Ti-sponge
MIL-T-13405C		US	Ti-powder (pyrotechnic use)
MIL-T-46035A (MR)		US	Ti-alloys, high-strength wrought for critical component
MIL-T-46038A Grade EL1		US	Ti-alloys with extra-low impurities (billet, bar, rod)
MIL-T-46038A Grade L1		US	Ti-alloys with low impurities (billet, bar, rod)
MIL-T-46038A Grade N1		US	Ti-alloys with normal impurities (billet, bar, rod)

APPENDIX 7. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-46077B	(6-4)	US	Ti-Al6-V4 (weldable armor plate)
MIL-T-81556 type III alpha-beta II		US	Ti-alpha+beta alloys (extrusion, bar)
MIL-T-81556 type III composition A	(6-4)	US	Ti-Al6-V4 (extrusion, bar)
MIL-T-81556 type III composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (extrusion, bar)
MIL-T-81556 type III composition C	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion, bar)
MIL-T-81556 type III composition D	(7-4)	US	Ti-Al7-Mo4 (extrusion, bar)
MIL-T-81556 type II alpha alloys		US	Ti-alpha alloys (extrusion, bar)
MIL-T-81556 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (extrusion, bar)
MIL-T-81556 type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 LEI (extrusion, bar)
MIL-T-81556 type II composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (extrusion, bar)
MIL-T-81556 type I composition A		US	Ti-unalloyed-99.6,CP,-30 ksi YS (extrusion, bar)
MIL-T-81556 type I composition B		US	Ti-unalloyed-99.5,CP,-40 ksi YS (extrusion, bar)
MIL-T-81556 type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (extrusion, bar)
MIL-T-81556 type I composition D		US	Ti-unalloyed-99.0,CP,-70 ksi YS (extrusion, bar)
MIL-T-81556 type I CP Titanium		US	Ti-unalloyed-99, CP (extrusion, bar)
MIL-T-81915 type III alpha+beta		US	Ti-alpha+beta alloys (investment castings)
MIL-T-81915 type III composition A	(6-4)	US	Ti-Al6-V4 (investment castings)
MIL-T-81915 type III composition B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (investment castings)
MIL-T-81915 type II alpha alloys		US	Ti-alpha alloys (investment castings)
MIL-T-81915 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (investment castings)
MIL-T-81915 type I composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (investment castings)
MIL-T-81915 type I CP Titanium		US	Ti-unalloyed-99+,CP,- ksi YS (investment castings)
MIL-T-9046H type III composition C	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-9046H type III composition D	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-9046H type III composition E	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9046H type III composition G	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-9046H type III composition H	(6-4) SPL	US	Ti-Al6-V4 SPL (sheet, strip, plate)
MIL-T-9046H type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
MIL-T-9046H type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)
MIL-T-9046H type II composition F	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9046H type II composition G	(6-2-1-1)	US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (sheet, strip, plate)
MIL-T-9046H type IV beta alloys		US	Ti-beta alloys (sheet, strip, plate)
MIL-T-9046H type IV composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (sheet, strip, plate)
MIL-T-9046H type IV composition B	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
MIL-T-9046H type IV composition C	(8-8-2-3)	US	Ti-Al3-V8-Mo8-Fe2 (sheet, strip, plate)
MIL-T-9046H type IV composition C	(Beta C)	US	Ti-Al3-V8-Mo4-Zr4-Cr6 (sheet, strip, plate)
MIL-T-9046H type I composition A		US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
MIL-T-9046H type I composition B		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
MIL-T-9046H type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
MIL-T-9046H type I CP alloys		US	Ti-unalloyed commercially pure titanium
MIL-T-9047E composition 1	alpha	US	Ti-unalloyed-99.0,PC,-70 ksi YS (sheet, strip, plate)
MIL-T-9047E composition 2	alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-9047E composition 3	alpha	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-T-9047E composition 5	alpha	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-9047E composition 6	alpha+beta	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-9047E composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-9047E composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-9047E composition 10	alpha+beta	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-T-9047E composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-T-9047E composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-T-9047E composition 14	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-9047E composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-T-9096H type II alpha alloys		US	Ti-alpha alloys (sheet, strip, plate)
MIL-T- 046H type III alpha+beta		US	Ti-alpha+beta alloys (sheet, strip, plate)
MIL-W-6858C		US	Ti-alloys, welding, resistance, spot, and seam
NFL 21-107	T-40	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
NFL 21-271	T-A6V	FR	Ti-Al6-V4 (rivet, cylindrical head)
NFL 21-272	T-A6V	FR	Ti-Al6-V4 (rivet, 100 degree milled head)
NFL 21-170	T 40	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)
NFL 15-130		FR	Ti-unalloyed-99.+CP (dimensions)(sheet)
ON 42 1496		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
ON 42 4656		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
OST1. 90000-70	OT4	UR	Ti-Al4.25-Mn1.4 (forging, stampings)
OST1. 90000-70	OT4-0	UR	Ti-Al0.8-Mn0.75 (forging, stampings)
OST1. 90000-70	OT4-1	UR	Ti-Al1.75-Mn1.35 (forging, stampings)
OST1. 90000-70	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (forging, stampings)
OST1. 90000-70	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (forging, stampings)
OST1. 90000-70	VT3-1	UR	Ti-Al6.25-Mo2.5-Cr1.5 (forging, stampings)
OST1. 90000-70	VT5	UR	Ti-Al5.25 (forging, stampings)
OST1. 90000-70	VT5-1	UR	Ti-Al5-Sn2.5 (forging, stampings)
OST1. 90000-70	VT6S	UR	Ti-Al5.75-V4 (forging, stampings)
OST1. 90000-70	VT8	UR	Ti-6.65-Mo3.3 (forging, stampings)
OST1. 90000-70	VT9	UR	Ti-Al6.4-Mo3.3-Zr1.4 (forging, stampings)
OST1. 90000-70	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
OST1. 90000-70	VT20	UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (forging, stampings)
OST1. 90002-70 (supersedes AMTU 368)		UR	Ti alloys blade forging
OST1. 90006-70 (supersedes AMTU 518)		UR	Ti alloys, bar for blade forging
OST1. 90013-71 (supersedes AMTU 388)		UR	Ti alloys, grades and designations
OST1. 90015-71	OT4	UR	Ti-Al4.25-Mn1.4 (welding wire)
OST1. 90015-71	OT4-1	UR	Ti-Al1.75-Mn1.35 (welding wire)
OST1. 90015-71	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
OST1. 90015-71 (supersedes AMTU 449)		UR	Titanium welding wire
OST1. 90024-71	OT4	UR	Ti-Al4.25-Mn1.4 (plate)
OST1. 90024-71	OT4-0	UR	Ti-Al0.8-Mn0.75 (plate)
OST1. 90024-71	OT4-1	UR	Ti-Al1.75-Mn1.35 (plate)
OST1. 90024-71	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
OST1. 90024-71	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)

APPENDIX 7. (Continued)

Standard Number	Realted Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90024-71	VT5-1	UR	Ti-Al5-Sn2.5 (plate)
OST1. 90024-71	VT6S	UR	Ti-Al5.75-V4 (plate)
OST1. 90024-71	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (plate)
OST1. 90027-71	OT4-0	UR	Ti-Al0.8-Mn0.75 (band=narrow strip)
OST1. 90027-71	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (band=narrow strip)
OST1. 90027-71	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (band=narrow strip)
OST1. 90050-72	OT4	UR	Ti-Al4.25-Mn1.4 (pipe)
OST1. 90050-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe)
OST1. 90050-72	OT401	UR	Ti-Al1.75-Mn1.35 (pipe)
OST1. 90050-72	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe)
OST1. 90050-72	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe)
OST1. 90051-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (welded pipe)
OST1. 90051-72	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welded pipe)
OST1. 90051-72	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (welded pipe)
OST1. 90065-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe, high quality)
OST1. 90065-72	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, high quality)
OST1. 90065-72	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (piep, high quality)
OST1. 90107-73	OT4	UR	Ti-Al4.25-Mn1.4 (round/square bar)
OST1. 90107-73	OT4-0	UR	Ti-Al0.8-Mn0.75 (round/square bar)
OST1. 90107-73	OT4-1	UR	Ti-Al1.75-Mn1.35 (round/square bar)
OST1. 90107-73	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (round/square bar)
OST1. 90107-73	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (round/square bar)
OST1. 90107-73	VT3-1	UR	Ti-Al6.25-Mn2.5-Cr1.5 (round/square bar)
OST1. 90107-73	VT5	UR	Ti-Al5.25 (round/square bar)
OST1.90107-73	VT5-1	UR	Ti-Al5-Sn2.5 (round/square bar)
OST1. 90107-73	VT6S	UR	Ti-Al5.75-V4 (round/square bar)
OST1. 90107-73	VT6	UR	Ti-Al6.25-V5.1 (round/square bar)
OST1. 90107-73	VT8	UR	Ti-Al6.65-Mo3.3 (round/square bar)
OST1. 90107-73	VT9	UR	Ti-Al6.4-Mo3.3-Zr1.4 (round/square bar)
OST1. 90107-73	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (round/square bar)
OST1. 90107-73	VT20	UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (round/square bar)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90107-73	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (round/square bar)
OST1. 90145-74	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (foil)
OST1. 90145-74	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (foil)
TU1-5-054-72	AT3	UR	Ti-Al2.75-Cr0.35 (sheet)
TU1-5-055-72	AT3	UR	Ti-Al2.75-Cr0.35 (bar, rolled/wrought)
TU1-5-058-72	AT3	UR	Ti-Al2.75-Cr0.35 (forging)
TU1-5-107-73	OT4	UR	Ti-Al4.25-Mn1.4 (pipe, extruded)
TU1-5-107-73	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, extruded)
TU1-5-107-73	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe, extruded)
TU1-5-107-73	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe, extruded)
TU1-5-107-73	OT4-1	UR	Ti-Al1.75-Mn1.35 (pipe, extruded)
TU1-5-111-73	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (strip, wide)
TU1-5-111-73	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (strip, wide)
TU1-83-21-72	OT4	UR	Ti-Al4.25-Mn1.4 (large rolled bar)
TU1-83-21-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large rolled bar)
TU1-83-21-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large rolled bar)
TU1-83-21-72	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large rolled bar)
TU1-83-21-72	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large rolled bar)
TU1-83-21-72	VT3-1	UR	Ti-Al6.25-Mo2.5-Cr1.5 (large rolled bar)
TU1-83-21-72	VT5	UR	Ti-Al5.25 (large rolled bar)
TU1-83-21-72	VT5-1	UR	Ti-Al5-Sn2.5 (large rolled bar)
TU1-83-21-72	VT6S	UR	Ti-Al5.75-V4 (large rolled bar)
TU1-83-21-72	VT8	UR	Ti-Al6.65-Mo3.3 (large rolled bar)
TU1-83-21-72	VT9	UR	Ti-Al6.4-Mo3.3-Zr1.4 (large rolled bar)
TU1-83-21-72	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (large rolled bar)
TU1-92-2-72	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (stampings and forgings)
TU1-92-6-72	OT4	UR	Ti-Al4.25-Mn1.4 (large round/square bar)
TU1-92-6-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large round/square bar)
TU1-92-6-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large round/square bar)
TU1-92-6-72	VT1-00	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large round/square bar)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
TU1-92-6-72	VT1-0	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large round/square bar)
TU1-82-6-72	VT3-1	UR	Ti-Al6.25-Mo2.5-Cr1.5 (large round/square bar)
TU1-92-6-72	VT5	UR	Ti-Al5.25 (large round/square bar)
TU1-92-6-72	VT5-1	UR	Ti-Al5-Sn2.5 (large round/square bar)
TU1-92-6-72	VT6S	UR	Ti-Al5.75-V4 (large round/square bar)
TU1-92-6-72	VT6	UR	Ti-Al6.25-V5.1 (large round/square bar)
TU1-92-6-72	VT8	UR	Ti-Al6.65-Mo3.3 (large round/square bar)
TU1-92-6-72	VT9	UR	Ti-Al6.4-Mo3.3-Zr1.4 (large round/square bar)
TU1-92-6-72	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (large round/square bar)
TU1-92-6-72	VT20	UR	Ti-Al6.4-V1.3-Mo1.25-Zr2 (large round/square bar)
TU1-92-6-72	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (large round/square bar)
TU 48-05-30-71		UR	Titanium powder, electrolytic
VdTuv 230	Group III	GY	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, solid forms)
VdTuv 230	Group II	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, solid forms)
VdTuv 230	Group IV	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, solid forms)
VdTuv 230	Group I	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, solid forms)
VTU IT-10-68(*1)		UR	Titanium powder, electrolytic
VTU 3-30-60(*1)		UR	Titanium powder, electrolytic
VTU 9-3-67(*1)		UR	Titanium powder, electrolytic

Note: AMI=Advanced Material Information(SAE), ANS=American National Standard Institute.

(*1) Non current specification.

(*2) Non current but widely used in the past and may be required on some existing designs in the future-AMS does not recommend as standard material for future use in new designs.

(*3) Non current uncoordinated specification.

(*4) Current uncoordinated specification.

(*5) Proposed specification.

**APPENDIX 8. NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS WITH THE CORRESPONDING
NOMINAL COMPOSITION (Alphanumerical by Nominal Composition)**

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-H-81200A		US	Ti-unalloyed and alloyed, heat treatment
MIL-T-9046H Type I CP Alloys		US	Ti-unalloyed commercially pure titanium
GOST 5303-69		UR	Ti-unalloyed sponge, quality requirements
INTA L-7004(*5)		SP	Ti-unalloyed
INTA L-7001(*5)		SP	Ti-unalloyed
INTA L-7003(*5)		SP	Ti-unalloyed
INTA L-7002(*5)		SP	Ti-unalloyed
DTD 5193(*1)		UK	Ti-unalloyed (sheet, strip)
DTD 5183(*1)		UK	Ti-unalloyed (sheet, strip)
ASTM B299-74	Ti sponge	US	Ti-unalloyed (sponge) four grades
ISO Draft Std. (resilient Ti)		XX	Ti-unalloyed-99.0,CP,-70 ksi Y _G (surgical implant)
DIN 3.7065 Werkstoff		GY	Ti-unalloyed-99.0,CP,-70 ksi YS
BS 2TA.7		UK	Ti-unalloyed-99.0,CP,-70 ksi YS (bar for machining)(annealed)
AMS 4921C		US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging, rod)(annealed)
MIL-T-009047F Composition 1(*4)		US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging stock)
ASTM B348-74	grade 4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging stock)
ASTM B367-69	grade C-4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (billet, bar)
MIL-T-81556 type I composition D		US	Ti-unalloyed-99.0,CP,-70 ksi YS (casting)
ASTM B381-75	grade F-4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (extrusion, bar)
BS 2TA.9		US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)
BS 2TA.8		UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)(annealed)
MIL-F-83142A Composition 1		UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging stock)
BS 3003(part 9)	grade 5	US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging premium quality)
BS 3003(part 9)	grade 4	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
ASTM F67-74	grade 4	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
LW 3.7064.1 (Werkstoff)		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, forging)(surgical impl.)
BS 2TA.6		GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, rod, forging)
MIL-T-9046H Type I Composition B		UK	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip)(annealed)
ASTM B265-74	grade 4	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9047E Composition 1	Alpha	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
AMS 4901E	(A70,75A)(grade 4)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)(annealed)
VdTUV 230 Group IV	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, solid forms)
AECMA Ti-P.04	(IMI-155/160)	EU	Ti-unalloyed-99.0,CP,-70 ksi YS (all forms)
AIR-9182 T-60	(IMI-160)	FR	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet)
ASTM B299-74 ML-120		US	Ti-unalloyed-99.1 (sponge)
DTD 5273 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DIN 3.7055 Werkstoff	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5283 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5273	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (bar for machining)
JIS H 4650 class 3 TB 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (bar)
ASTM B348-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (billet, bar)
ASTM B367-69 grade C-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (casting)
MIL-T-81556 type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (extrusion, bar)
DTD 5283	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (forging stock)
ASTM B381-75 grade F-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (forging)
BS 3003(part 9) grade 3	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (for chemical linings)
JIS H 4631 class 3 TTH 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (heat exchanger tubing)
JIS H 4630 class 3 TTP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (ordinary pipe)
JIS H 4600 class 3 TP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (plate)
ASTM B337-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless welding pipe)
ASTM B265-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
MIL-T-9046H type I Composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
AMS 4900D	(A55,65A)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
VdTUV 230 group III	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, solid forms)
JIS H 4670 class 3 TW 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (wire)
ASTM B363-71 grade WPT3	(grade 3, C3)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (fittings-weld, seamless)
AECMA Ti-P.05	(IMI-130)	EU	Ti-unalloyed-99.2,CP,-55 ksi YS (rivet wire)
ASTM B338-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless/weld, heat exch.)
AIR-9182 T-50	(IMI-130)	FR	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5023C(*1)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
ASTM B299-74 SL-120		US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74 MD-120		US	Ti-unalloyed-99.3 (sponge)
ASTM F67-74 grade 3		US	Ti-unalloyed-99.3,CP,-50 ksi YS (sheet, forging)(surgical impl)
AWS A5.16-70 ERT1-4		US	Ti-unalloyed-99.4,CP,- ksi YS (welding wire)
CSN 42 1490		CZ	Ti-unalloyed-99.5,CP (dimensions)(sheet, strip)
DIN 3.7035 Werkstoff	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS
EMO Ti-140	(B348 grade 2)	GE	Ti-unalloyed-99.5,CP,-40 ksi YS
OST1. 90027-71 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (band=narrow strip)
BS 2TA.3	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (bar for machining)(annealed)
CSN 42 1492		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
JIS H 4650 class 2 TB 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
AMTU 451-67 VT1-0		UR	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
ASTM B348-74 grade 2	(B348 grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (billet, bar)
ASTM B367-69 grade C-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (casting)
CSN 42 7790		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(tubing)
CSN 42 7591		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar/machining)
CSN 42 7590		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar)
CSN 42 7391		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(strip, sheet)
CSN 42 7390		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(strip, sheet)
MIL-T-81556 type I Composition B		US	Ti-unalloyed-99.5,CP,-40 ksi YS (extrusion, bar)
ASTM B381-75 grade F-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)
BS 2TA.5	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)(annealed)
OST1. 90000-70 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (forging, stampings)
BS 2TA.4	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging stock)
BS 3003(part 9) grade 2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (for chemical linings)
OST1. 90145-74 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (foil)
JIS H 4631 class 2 TTH 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (heat exchanger tubing)
ON 42 4656		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
ON 42 1496		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition	Wt % and Form
CSN 42 4655		CZ	Ti-unalloyed-99.5,CP,-40 ksi	YS (ingot)
TU1-83-21-72	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (large rolled bar)
TU1-92-6-72	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (large round/square bar)
JIS H 4630 class 2 TTP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi	YS (ordinary pipe)
OST1. 90050-72	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (pipe)
TU1-5-107-73	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	&S (pipe, extruded)
OST1. 90065-72	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (pipe, high quality)
OST1. 90024-71	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (plate)
JIS H 4600 class 2 TP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi	YS (plate)
OST1. 90107-73	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (round/square bar)
ASTM B337-74 grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi	YS (seamless/welding pipe)
LW 3.7034.1 (Werkstoff)	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, rod, forging, welding wire)
AMTU 475-67 (Werkstoff)		UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet)
BS 2TA.2	(B348 grade 2)	UK	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, strip)(annealed)
MIL-T-9046H type I Composition A	(IMI-125)	US	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, strip, plate)
ASTM B265-74 grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, strip, plate)
AMS 4902B	(A40,55A)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, strip, plate)(annealed)
VdTuV 230	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi	YS (sheet, solid forms)
TU1-5-111-73	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (strip, wire)
CSN 42 1493		CZ	Ti-unalloyed-99.5,CP,-40 ksi	YS (tubing)
OST1. 90051-72	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi	YS (welded pipe)
AMS 4951C	(CP)	US	Ti-unalloyed-99.5,CP,-40 ksi	YS (welding wire)
CSN 42 1491		CZ	Ti-unalloyed-99.5,CP,-40 ksi	YS (wire)
CSN 42 7490		CZ	Ti-unalloyed-99.5,CP,-40 ksi	YS (wire)
JIS H 4670 class 2 TW 35		JA	Ti-unalloyed-99.5,CP,-40 ksi	YS (wire)
AECMA Ti-P.02	(IMI-125)	EU	Ti-unalloyed-99.5,CP,-40 ksi	YS (all forms)
ASTM B363-71	(grade 2, C2)	US	Ti-unalloyed-99.5,CP,-40 ksi	YS (fittings-welding/seamless)
NFL-21-170		FR	Ti-unalloyed-99.5,CP,-40 ksi	YS (rivet wire)
NFL-21-107		FR	Ti-unalloyed-99.5,CP,-40 ksi	YS (rivet wire)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMS 4942A	(CP)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless tubing)(annealed)
ASTM B338 74 grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless/weld. heat exch.)
AIR-9182 T-40	(IMI-125)	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AMS 4941A	(A40,55A)	UD	Ti-unalloyed-99.5,CP,-40 ksi YS (weld. tubing)(annealed)
EMO Ti-110	(B348 grade 1)	GE	Ti-unalloyed-99.6,CP,-25 ksi YS
DIN 3.7025 Werkstoff	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS
OST1. 90027-71 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (band=narrow strip)
AWS A5.16-70 ERT1-3		US	Ti-unalloyed-99.6,CP,-25 ksi YS (bare wire)
JIS H 4650 class 1 TB 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
AMTU 451-67 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
ASTM B348-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (billet, bar)
ASTM B367-69 grade C-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (casting)
ASTM B381-75 Grade F-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (forging)
OST1. 90000-70 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (forging, stampings)
OST1. 90145-74 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (foil)
JIS H 4631 class 1 TTH 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (heat exchanger tubing)
TU1-83-21-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large rolled bar)
TU1-92-6-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large round/square bar)
JIS H 4630 class 1 TTP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (ordinary pipe)
OST1. 90050-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe)
TU1-5-107-73 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, extruded)
OST1. 90065-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, high quality)
OST1. 90024-71 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
JIS H 4600 class 1 TP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
OST1. 90107-73 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (round/square bar)
ASTM B338-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless/welding pipe)
ASTM B337-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless/welding pipe)
LW 3.7024.1 (Werkstoff)	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, welding wire)
AMTU 475-67 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
BS 2TA.1	(IMI-115/160)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip)(annealed)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B265-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip, plate)
VdTuv 230 group I	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, solid forms)
TU1-5-111-73 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (strip, wide)
BS 3531/1.5	(IMI-115,125,130)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
OST1. 90051-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welded pipe)
OST1. 90015-71 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
AWS A5.16-70 ERTI-2		US	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
JIS H 4670 class 1 TW 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (wire)
AECMA Ti-P.01	(IMI-115)	EU	Ti-unalloyed-99.6,CP,-25 ksi YS (all forms)
DTD 50138(*1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 50038(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
ASTM B363-71 grade WPT1	(grade 1, C1)	US	Ti-unalloyed-99.6,CP,-25 ksi YS (fittings-weld./seamless)
BS CP 3003(part 9)grade 1	(IMI-115,125)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (for chemical linings)
AIR-9182 T-35	(IMI-115)	FR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
DTD 50338(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
ISO Draft Std. (Ductile Ti)	(IMI-115)	XX	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
MIL-T-81915 type I Composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (investment castings)
MIL-T-81556 type I Composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (extrusion, bar)
JIS H 2151 class 1 TS-105		JA	Ti-unalloyed-99.6 (sponge)
DTD 5073(*1)		UK	Ti-unalloyed-99.7,CP, C0.1,Fe0.2
DTD 5063A(*1)		UK	Ti-unalloyed-99.7,CP (sheet)
AWS A5.16-70 ERTI-1		US	Ti-unalloyed-99.7,CP,- ksi YS (welding wire)
ASTM B299-74 group 1		US	Ti-unalloyed-99.+ (sponge)
DIN 17862	(CP)	GY	Ti-unalloyed-99.+CP, all grades (bar)(annealed)
DIN 17860	(CP)	GY	Ti-unalloyed-99.+CP, all grades (sheet, strip)
DIN 17863	(CP)	GY	Ti-unalloyed-99.+CP, all grades (wire)(annealed)
MIL-R-81558 type I CP Titanium	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod, wire)
MIL-T-81915 type I CP Titanium		US	Ti-unalloyed-99.+CP,- ksi YS (investment castings)
DIN 17850		GY	Ti-unalloyed-99.+CP, all grades
NF L 15-130		FR	Ti-unalloyed-99.+CP (dimensions)(sheet)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-R-81558 type I Composition A	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod, wire)
MIL-R-81558 type I Composition B	(CP)	US	Ti-unalloyed-99.+CP,- ksi YS (welding rod, wire)
MIL-T-81556 type I CP Titanium	(CP)	US	Ti-unalloyed-99. CP (extrusion, bar)
DIN 17864		GY	Ti-unalloyed, Ti-Al6-V4, Ti-Al5-Sn2 (forging)(annealed)
ANS Z179.1		US	ANS Titanium specifications equivalent to ASTM B265-74
ANS Z179.13		US	ANS Titanium specifications equivalent to ASTM B299-74
ANS H50.2		US	ANS Titanium specifications equivalent to ASTM B338-74
ANS Z179.2		US	ANS Titanium specifications equivalent to ASTM B348-74
ANS H50.1		US	ANS Titanium specifications equivalent to ASTM B363-71
ANS Z179.16		US	ANS Titanium specifications equivalent to ASTM B367-69(74)
BS 2TA.100		UK	Inspection and testing of titanium alloys
OST1. 90002-70 (supersedes AMTU 368)		UR	Titanium alloys blade forging
OST1. 90006-70 (supersedes AMTU 518)		UR	Titanium alloys, bar, for blade forging
OST1. 90013-71 (supersedes AMTU 388)		UR	Titanium alloys, grades and designations
AMTU 388(*1)		UR	Titanium alloys, grades
MIL-HDBK-697A		US	Titanium and Titanium alloys, US Military Handbook
VTU 9-3-67(*1)		UR	Titanium powder, electrolytic
VTU IT-10-68(*1)		UR	Titanium powder, electrolytic
VTU 3-30-69(*1)		UR	Titanium powder, electrolytic
TU 48-05-30-71		UR	Titanium powder, electrolytic
AMTU 386-59		UR	Titanium tubing
AMTU 499(*1)		UR	Titanium welding pipe
OST1. 90015-71 (supersedes AMTU 449)		UR	Titanium welding wire
ISO T119/SC5		XX	Titanium (powder)
AMTU 487-20		UR	Titanium, extruded and rolled
AMTU 451-59		UR	Titanium, rolled
AMTU 476-61		UR	Titanium, sheet, mechanical properties
AMTU 368(*1)		UR	Titanium, stampings and fittings
MIL-T-46038A	grade EL1	US	Ti-alloys with extra-low impurities (billet, bar, rod)
MIL-T-46038A	grade L1	US	Ti-alloys with low impurities (billet, bar, rod)
MIL-T-46038A	grade N1	US	Ti-alloys with normal impurities (billet, bar, rod)
MIL-T-46035A (MR)		US	Ti-alloys, high-strength wrought for (critical component)

APPENDIX 8. (Continued)

Standard Numbers	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-W-6858C		US	Ti-alloys, welding, resistance, spot, and seam
MIL-R-81558 type III alpha+beta		US	Ti-alpha+beta alloys (welding rod wire)
MIL-T-81915 type III alpha+beta		US	Ti-alpha+beta alloys (investment castings)
MIL-T-046H type III alpha+beta		US	Ti-alpha+beta alloys (sheet, strip, plate)
MIL-T-81556 type III alpha-beta Ti		US	Ti-alpha+beta alloys (extrusion, bar)
MIL-R-81558 type II alpha alloys		US	Ti-alpha alloys (welding rod wire)
MIL-T-81915 type II alpha alloys		US	Ti-alpha alloys (investment castings)
MIL-T-9096H type II alpha alloys		US	Ti-alpha alloys (sheet, strip, plate)
MIL-T-81556 type II alpha alloys		US	Ti-alpha alloys (extrusion, bar)
OST1. 90027-71 OT4-0		UR	Ti-Al0.8-Mn0.75 (band=narrow strip)
AMTU 451-67 OT4-0		UR	Ti-Al0.8-Mn0.75 (bar)
OST1. 90000-70 OT4-0		UR	Ti-Al0.8-Mn0.75 (forging, stampings)
TU1-83-21-72 OT4-0		UR	Ti-Al0.8-Mn0.75 (large rolled bar)
TU1-92-6-72 OT4-0		UR	Ti-Al0.8-Mn0.75 (large round/square bar)
OST1. 90050-72 OT4-0		UR	Ti-Al0.8-Mn0.75 (pipe)
TU1-5-107-73 OT4-0		UR	Ti-Al0.8-Mn0.75 (pipe, extruded)
OST1. 90065-72 OT4-0		UR	Ti-Al0.8-Mn0.75 (pipe, high quality)
OST1. 90024-71 OT4-0		UR	Ti-Al0.8-Mn0.75 (plate)
OST1. 90107-73 OT4-0		UR	Ti-Al0.8-Mn0.75 (round/square bar)
AMTU 475-67 OT4-0		UR	Ti-al0.8-Mn0.75 (sheet)
OST1. 90051-72 OT4-0		UR	Ti-Al0.8-Mn0.75 (welded pipe)
DTD 50548(*1)		UK	Ti-Al1.5-Mn1.5 (bar)
AMTU 451-67 OT4-1		UR	Ti-Al1.75-Mn1.35 (bar)
OST1. 90000-70 OT4-1		UR	Ti-Al1.75-Mn1.35 (forging, stampings)
TU1-83-21-72 OT4-1		UR	Ti-Al1.75-Mn1.35 (large rolled bar)
TU1-92-6-72 OT4-1		UR	Ti-Al1.75-Mn1.35 (large round/square bar)
OST1. 90050-72 OT4-1		UR	Ti-Al1.75-Mn1.35 (pipe)
TU1-5-107-73 OT4-1		UR	Ti-Al1.75-Mn1.35 (pipe, extruded)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90024-71	OT4-1	UR	Ti-Al11.75-Mn1.35 (plate)
OST1. 90107-73	OT4-1	UR	Ti-Al11.75-Mn1.35 (round/square bar)
AMTU 475-67	OT4-1	UR	Ti-Al11.75-Mn1.35 (sheet)
OST1. 90015-71	OT4-1	UR	Ti-Al11.75-Mn1.35 (welding wire)
DTD 5043B(*1)	(IMI-315)	UK	Ti-Al2-Mn2 (bar)
MIL-T-009047F Composition 10(*4)	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-F-83142A Composition 10	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (forging/premium quality)
MIL-T-9047E Composition 10	alpha+beta	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
BS TA.26 (seldom used)	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.25 (seldom used)	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.18	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.19	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging stock)
BS TA.20	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.27 (seldom used)	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
AIR T-E11D4E	(IMI-680)	FR	Ti-Al2.25-Mo4-Sn 11-Si0.2
DTD 5213(*1)	(IMI-680)	UK	Ti-Al2.25-Mo4-Sn 11-Zi0.2 (bar)
DTD 5113(*1)		UK	Ti-Al2.2-Mo1-Sn 11-Zr5-Si0.4 (bar)
AMS 4974		US	Ti-Al2.30Mo1-Sn 11-Zr5-Si0.2 (bar, forging)(sol. and precipitation treated)
AMTU 552-69	VT16	UR	Ti-Al2.3-V4.5-Mo5 (bar for fasteners)
AMTU 553-63	VT16	UR	Ti-Al2.30V4.5-Mo5 (ground bar for fasteners)
TU1-5-055-72	AT3	UR	Ti-Al2.75-Cr0.35 (bar, rolled/wrought)
TU1-5-058-72	AT3	UR	Ti-Al2.75-Cr0.35 (forging)
TU1-5-054-72	AT3	UR	Ti-Al2.75-Cr0.35 (sheet)
AMS 4927(*1)		US	Ti-Al3-Cr5 (bar, forging, forging stock)
AWS A5.16-70	ERT1-3Al-2.5V	US	Ti-Al3-V2.5 (bare welding rods)
AMS 4944		US	Ti-Al3-V2.5 (seamless hydraulic treated)(cold work, stress relieved)
AMS 4943		US	Ti-Al3-V2.5 (seamless tubing)(annealed)
ASTM B338-74	grade 9	US	Ti-Al3-V2.5 (seamless/weld. heat exchanger tubing)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt. % and Form
ASTM B337-74 grade 9	(half 6-4)	US	Ti-Al3-V2.5 (seamless/welding pipe)
AWS A5.16-70 ERTI-3Al-2.5V-1	(3-2.5)	US	Ti-Al3-V2.5 (very high purity compositions)(bare wire)
AIR T-D8C6DZRA	(beta C)	FR	Ti-Al3-V8-Mo4-Zr4-Cr6
MIL-T-9046H type IV Composition C	(beta C)	US	Ti-Al3-V8-Mo4-Zr4-Cr6 (sheet, strip, plate)
MIL-T-9046H type IV Composition C	(8-8-2-3)	US	Ti-Al3-V8-Mo8-Fe2 (sheet, strip, plate)
INTA L-7701(*5)	(13-11-3)	SP	Ti-Al3-V 13-Cr 11
MIL-T-009047F Composition 12(*4)	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-F-83142A Composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (forging/premium quality)
MIL-R-81558 type IV Composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (welding rod, wire)
MIL-T-9046H type IV Composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (sheet, strip, plate)
MIL-T-9047E Composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
AWS A5.16-70 ERTI-13V-11Cr-3	(B-120)	US	Ti-Al3-V 13-Cr 11 (bare welding rods)
AMS 4917B	(B120VCA)	US	Ti-Al3-V 13.5-Cr 11 (sheet, strip, plate)(solution heat treated)
DTD 5053(*1)	(IMI-550)	UK	Ti-Al4-Mn4 (bar)
DTD 5143(*1)		UK	Ti-Al4-Mn4 (forging)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mn4 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mn4 (forging)
AECMA Ti-P.62	(IMI-314)	EU	Ti-Al4-Mn4 (bar, forging)
AMS 4025B(*2)	(C130AM)	US	Ti-Al4-Mn4 (bar, forging)(annealed)
AIR-9183 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bar, rod, forging)
AIR-9184 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bolts, fasteners)
AECMA Ti-P.68	(IMI-550)	EU	Ti-Al4-Mo4-Sn2-Si0.2 (bar, forging)
AIR T-A4DE	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A4DE2	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
DTD 5103(*1) (see TA.35,296)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)
DTD 5203(*1) (see TA.38)	(IMI-551)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (billet, bar)
DTD 5153(*1) (see TA.31,34)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
DTD 5333	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.32(*1) (see TA.46)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.29(*1) (see TA.45)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.35(*1) (see TA.49)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.46	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.49	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.45	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)(heat treated)
LW 3.7184 (draft)	(IMI-550)	GY	Ti-Al4-Mo4-Sn2-Si0.5 (bar, billet)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock to 100 mm)
BS TA.47	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.36(*1) (see TA.36)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.33(*1) (see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.50	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.30(*1) (see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging to 100 mm)
BS TA.31(*1) (see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.34(*1) (see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.37(*1) (see TA.51)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.48	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.51	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.57	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (plate)(heat treated)
DTD 5223(*1) (see TA.42)	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5 (forging)
BS TA.38	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (bar for machining)(heat treated)
BS TA.40	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (bar for machining)(heat treated)
BS TA.39	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging stock)
BS TA.41	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging stock)
BS TA.42	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging)(heat treated)
AMS 4913A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(sol. and precipitation treated)
MAS 4912A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution heat treated)
AMTU 451-67 OT4		UR	Ti-Al4.25-Mn1.4 (bar)
OST1. 90000-70 OT4		UR	Ti-Al4.25-Mn1.4 (forging, stampings)
TU1-83-21-72 OT4		UR	Ti-Al4.25-Mn1.4 (large rolled bar)
TU1-92-6-72 OT4		UR	Ti-Al4.25-Mn1.4 (large round/square bar)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90050-72 OT4		UR	Ti-Al4.25-Mn1.4 (pipe)
TU1-5-107-73 OT4		UR	Ti-Al4.25-Mn1.4 (pipe, extruded)
OST1. 90024-71 OT4		UR	Ti-Al4.25-Mn1.4 (plate)
OST1. 90107-73 OT4		UR	Ti-Al4.25-Mn1.4 (round/square bar)
AMTU 475-67 OT4		UR	Ti-Al4.25-Mn1.4 (sheet)
OST1. 90015-71 OT4		UR	Ti-Al4.25-Mn1.4 (welding wire)
AMTU 451-67 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (bar)
AMTU 461-70 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
OST1. 90000-70 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
TU1-83-21-72 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (large rolled bar)
TU1-92-6-72 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (large round/square bar)
OST1. 90024-71 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (plate)
OST1. 90107-73 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (round/square bar)
AMTU 475-67 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (sheet)
AMS 4968A(*1)		US	Ti-Al5-Sn2-Zr5 (bar, forging)(annealed)
MIL-T-009047F Composition 3(*4)	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-F-83142A Composition 3	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (forging premium quality)
MIL-R-81558 type II Composition B	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (welding rod wire)
MIL-T-9046H type II Composition B	(A-110)ELI	US	Ti-Al50Sn2.5 ELI (sheet, strip, plate)
MIL-T-9047E Composition 3	alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-81556 type II Composition B	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (extrusion, bar)
AMS 4924C	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging, rod)(annealed)
AMS 4909C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)(annealed)
AIR T-A5E	(A-110)	FR	Ti-Al5-Sn2.5
L-7101	(A-110)	SP	Ti-Al5-Sn2.5
AMTU 451-67 VT5-1	(A-110)	UR	Ti-Al5-Sn2.5 (bar)
MIL-T-009047F Composition 2(*4)	(A-110)	US	Ti-Al5-Sn2.5 (bar, forging stock)
OST1. 90000-70 VT5-1		UR	Ti-Al5-Sn2.5 (forging, stampings)
MIL-F-83142A Composition 2	(A-110)	US	Ti-Al5-Sn2.5 (forging premium quality)
TU1-83-21-72 VT5-1		UR	Ti-Al5-Sn2.5 (large rolled bar)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
TU1-92-6-72	VT5-1	UR	Ti-Al5-Sn2.5 (large round/square bar)
OST1. 90024-71	VT5-1	UR	Ti-Al5-Sn2.5 (plate)
OST1. 90107-73	VT5-1	UR	Ti-Al5-Sn2.5 (round/square bar)
MIL-R-81558 type II Composition A	(A-110)	US	Ti-Al5-Sn2.5 (welding rod wire)
DTD 5083(*1) (see TA.15)	(IMI-317)	UK	Ti-Al5-Sn2.5 (bar)
DTD 5093(*1) (see TA.14)	(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
MIL-T-81915 type II Composition A	(A-110)	US	Ti-Al5-Sn2.5 (investment castings)
MIL-T-9046H type II Composition A	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
MIL-T-9047E Composition 2	alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-81556 type II Composition A	(A-110)	US	Ti-Al5-Sn2.5 (extrusion, bar)
DIN 3.7115 Werkstoff	(A-110)	GY	Ti-Al5-Sn2.5 (all forms)
LW 3.7114 (draft)	(IMI-317)	GY	Ti-Al5-Sn2.5 (all forms)
AWS A5.16-70	(A-110)	US	Ti-Al5-Sn2.5 (bare welding rods)
BS TA.15(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (bar for machining)
AECMA Ti-P.65	(IMI-317)	EU	Ti-Al5-Sn2.5 (bar, forging)
AMS 4926E	(A110AT)	US	Ti-Al5-Sn2.5 (bar, rod)(annealed)
ASTM B348-74	(A-110)	US	Ti-Al5-Sn2.5 (billet, bar)
ASTM B367-69	(A-110)	US	Ti-Al5-Sn2.5 (casting)
BS TA.16(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (forging stock)
BS TA.17(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (forging)
ASTM B381-75	(A-110)	US	Ti-Al5-Sn2.5 (forging)
AMS 4966E	(A110AT)	US	Ti-Al5-Sn2.5 (forging)(annealed)
BS TA.14(*1)	(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
ASTM B265-74	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
AMS 4910F	(A110AT)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)(annealed)
AWS A5.16-70	(A-110)	US	Ti-Al5-Sn2.5 (very high purity compositions)
AMS 4953	(A110AT)	US	Ti-Al5-Sn2.5 (welding wire)
MIL-F-93142A Composition 4		US	Ti-Al5-Sn5-Zr5 (not used)(forging premium quality)
AMTU 451-67	VT22	UR	Ti-Al5.15-V4.75 Mo4.75 Cr1.25 (bar)
TU1-92-6-72	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (large round/square bar)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90107-73	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (round/square bar)
TU1-92-2-72	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (stampings and forgings)
AMTU 451-67	VT5	UR	Ti-Al5.25 (bar)
OST1. 90000-70	VT5	UR	Ti-Al5.25 (forgings, stampings)
TU1-83-21-72	VT5	UR	Ti-Al5.25 (large rolled bar)
TU1-92-6-72	VT5	UR	Ti-Al5.25 (large round/square bar)
OST1. 90107-73	VT5	UR	Ti-Al5.25 (round/square bar)
AMTU 475-67	VT5	UR	Ti-Al5.25 (sheet)
AMS 4929(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (bar)(annealed)
AMS 4969(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (forging, forging stock)(annealed)
AMTU 451-67	VT6S	UR	Ti-Al5.75-V4 (bar)
OST1. 90000-70	VT6S	UR	Ti-Al5.75-V4 (forgings, stampings)
TU1-83-21-72	VT6S	UR	Ti-Al5.75-V4 (large rolled bar)
TU1-92-6-72	VT6S	UR	Ti-Al5.75-V4 (large round/square bar)
OST1. 90024-71	VT6S	UR	Ti-Al5.75-V4 (plate)
OST1. 90107-73	VT6S	UR	Ti-Al5.75-V4 (round/square bar)
AMTU 475-67	VT6S	UR	Ti-Al5.75-V4 (sheet)
LW 3.7154 (draft)		GY	Ti-Al6-Mo0.5-Zr5-Si0.25 (bar, billet)
AECMA Ti-P.67		EU	Ti-Al6-Mo0.5-Zr5-Si0.3 (bar, forging)
BS TA.43		UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging stock)
BS TA.44		UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging)(heat treated)
MIL-R-81558 type II Composition D		US	Ti-Al6-Mo0.8-Cb/Mb2-Ta1 (welding rod wire)
MIL-T-9046H type II Composition G		US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (sheet, strip, plate)
AIR T-A6ZD		FR	Ti-Al6-Mo0.8-Zr5-Si0.25
LW 3.7154 Werkstoff		GY	Ti-Al6-Mo0.8-Zr5-Si0.3
AMI 17(*2)		US	Ti-Al6-Mo1-Cb/Nb2-Ta1
AWS A5.16-70	ERTI-6Al-2Cb-1	US	Ti-Al6-Mo1-Cb/Nb2-Ta1 (bare welding rods)
LW 3.7144 Werkstoff		GY	Ti-Al6-Mo2-Sn2-Zr4
MIL-T-009047F Composition 11(*4)		US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-F-93142A Composition 11		US	Ti-Al6-Mo2-Sn2-Zr4 (forging/premium quality)
MIL-T-009046G Composition 11(*3)		US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
*MIL-T-81915 type III Composition B		US	Ti-Al6-Mo2-Sn2-Zr4 (investment castings)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9046H type III Composition G	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-9047E Composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
AMS 4975B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, rod)(sol. and precipitation treated)
AMS 4976	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging)(sol. and precipitation treated)
DTD M201(*1)		UK	Ti-Al6-Mo4-Zr5-Cu1-Si0.2
MIL-T-009047F Composition 14(*4)	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-9047E Composition 14	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
AMS 4981	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, wire, forging, forging stock) (solution and precipitation treated)
DIN 17851	(6-4)(A-110)	GY	Ti-Al6-V4 and Ti-Al5-Sn2 (extrusion)(annealed)
MIL-T-009047F Composition 7(*4)	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-F-83142A Composition 7	(6-4) ELI	US	Ti-Al6-V4 ELI (forging premium quality)
MIL-T-009046G Composition 7(*3)	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-R-81558 type III Composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (welding rod wire)
MIL-T-9046H type III Composition D	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-9047E Composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E Composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-81556 type III Composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (extrusion, bar)
AMS 4930A	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging, rod)(annealed)
ASTM F136-70	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, bar, forging)(surgical implants)
AMS 4907C	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)(annealed)
AMS 4956	(6-4) ELI	US	Ti-Al6-V4 ELI (welding wire)(environment controlled)
MIL-T-9046H type III Composition H	(6-4) SPL	US	Ti-Al6-V4 SPL (sheet, strip, plate)
INTA L-7301(*5)	(6-4)	SP	Ti-Al6-V4
LW 3.7164 Werkstoff	(6-4)	GY	Ti-Al6-V4
MIL-T-009047F Composition 6(*4)	(6-4)	US	Ti-Al6-V4 (bar, forging stock)
MIL-F-83142A Composition 6	(6-4)	US	Ti-Al6-V4 (forging premium quality)
MIL-T-009046G Composition 6(*3)	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-R-81558 type III Composition A	(6-4)	US	Ti-Al6-V4 (welding rod wire)
ISO Draft Std. (alloy)	(IMI-318)	XX	Ti-Al6-V4 (surgical implant)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5173(*1) (see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar)
DTD 5163(*1) (see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
MIL-T-81915 type III Composition A	(6-4)	US	Ti-Al6-V4 (investment castings)
MIL-T-9046H type III Composition C	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-9047E Composition 6	alpha+beta	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-81556 type 4II Composition A	(6-4)	US	Ti-Al6-V4 (extrusion, bar)
DIN 3.7165 Werkstoff	(6-4)	GY	Ti-Al6-V4 (all forms)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
AIR-9184 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bolts, fasteners)
AWS A5.16-70 ERTI-6Al-4V	(6-4)	US	Ti-Al6-V4 (bare welding rods)
AECMA Ti-P.63	(IMI-318)	EU	Ti-Al6-V4 (bar, forging, annealed, sheet)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
BS TA.11(*1) (see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
BS 2TA.11	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)(annealed)
AMS 4928G	(C120AV)(6-4)	US	Ti-Al6-V4 (bar, forging)(annealed)
AMS 4965C	(6-4)	US	Ti-Al6-V4 (bar, forging, rod)(sol. and precipitation treated)
AIR-9183 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bar, rod, forging)
ASMT B348-74 grade 5	(6-4)	US	Ti-Al6-V4 (billet, bar)
LW 3.7164.7 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (bolt stock)
ASTM B367-69 grade C-5	(6-4)	US	Ti-Al6-V4 (castings)
AMS 4934	(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(sol. treated/aged)
AMS 4935C	(C120AV)(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(annealed)
BS TA.12(*1) (see 2TA.12)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS TA.28(*1) (see 2TA.28)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.12	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.28	(IMI-318)	UK	Ti-Al6-V4 (forging stock, wire)(fasteners)
BS TA.13(*1) (see 2TA.13)	(IMI-318)	UK	Ti-Al6-V4 (forging)
ASTM B381-75 grade F-5	(6-4)	US	Ti-Al6-V4 (forging)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS 2TA.13	(IMI-318)	UK	Ti-Al6-V4 (forging)(annealed)
AMS 4967D	(6-4)	US	Ti-Al6-V4 (forging, bar)(annealed)(heat treatable)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forgings)
BS TA.56	(IMI-318)	UK	Ti-Al6-V4 (plate)(annealed)
BS TA.10(*1) (see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
LW 3.7164.1 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (sheet, rod, forging)
BS 2TA.10	(IMI-318)	UK	Ti-Al6-V4 (sheet, strip)(annealed)
AMS 4906	(6-4)	US	Ti-Al6-V4 (sheet, strip)(continuous rolled and annealed)
ASTM B265-74 grade 5	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
AMS 4911C	(C120AV)(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)(annealed)
AWS I5.16-70 ERTI-6Al-4V-1	(6-4)	US	Ti-Al6-V4 (very high purity compositions)(bare wire)
MIL-T-46077B	(6-4)	US	Ti-Al6-V4 (weldable armor plate)
AMS 4954B	(C120AV)	US	Ti-Al6-V4 (welding wire)
NFL 21-271 T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, cylindrical head)
NFL 21-272 T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, 100 degree milled head)
AIR T-A6VE	(6-6-2)	FR	Ti-Al6-V6-Sn2
LW 3.7174 Werkstoff	(6-6-2)	GY	Ti-Al6-V6-Sn2
MIL-T-009047F Composition 8(*4)	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-F-83142A Composition 8	(6-6-2)	US	Ti-Al6-V6-Sn2 (forging/premium quality)
MIL-T-009046G Composition 8(*3)	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9046H type III Composition E	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9047E Composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E Composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-81556 type III Composition C	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion, bar)
AECMA Ti-P.64	(6-6-2)	EU	Ti-Al6-V6-Sn2 (bar, forging, annealed, heat treated)
AMS 4978A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed)
AMS 4971A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed, heat treated)
AMS 4979	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(sol. and precipitation treated)
AMS 4936	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion)
AMS 4918D	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)(annealed)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMI 10(*2)	(IMI-684 alloy)	US	Ti-Al6-Zr5-W1-Si0.2
DTD M200(*1)		UK	Ti-Al6-Zr5-W1-Si0.3
AMTU 451-67		UR	Ti-Al6.25-Mo2.5-Cr1.5 (bar)
OST1. 90000-70		UR	Ti-Al6.25-Mo2.5-Cr1.5 (forging, stampings)
AMTU 553-63		UR	Ti-Al6.25-Mo2.5-Cr1.5 (ground bar for fasteners)
TU1-83-21-72		UR	Ti-Al6.25-Mo2.5-Cr1.5 (large rolled bar)
TU1-92-6-72		UR	Ti-Al6.25-Mo2.5-Cr1.5 (large round/square bar)
OST1.90107-73		UR	Ti-Al6.25-Mo2.5-Cr1.5 (round/square bar)
AMTU 451-67		UR	Ti-Al6.25-V5.1 (bar)
TU1-92-6-72		UR	Ti-Al6.25-V5.1 (large round/square bar)
OST1.90107-73		UR	Ti-Al6.25-V5.1 (round/square bar)
AMTU 475-67		UR	Ti-Al6.25-V5.1 (sheet)
AMTU 451-67		UR	Ti-Al6.4-Mo3.3-Zr1.4 (bar)
OST1. 9000-70		UR	Ti-Al6.4-Mo3.3-Zr1.4 (forging, stampings)
TU1-83-21-72		UR	Ti-Al6.4-Mo3.3-Zr1.4 (large rolled bar)
TU1-92-6-72		UR	Ti-Al6.4-Mo3.3-Zr1.4 (large round/square bar)
OST1. 90107-73		UR	Ti-Al6.4-Mo3.3-Zr1.4 (round/square bar)
AMTU 451-67		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (bar)
OST1. 90000-70		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (forging, stampings)
TU1-92-6-72		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (large round/square bar)
OST1.90107-73		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (round/square bar)
AMTU 475-67		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (sheet)
AMTU 451-67		UR	Ti-Al6.65-Mo3.3 (bar)
OST1. 90000-70		UR	Ti-Al6.65-Mo3.3 (forging, stampings)
TU1-83-21-72		UR	Ti-Al6.65-Mo3.3 (large rolled bar)
TU1-92-5-72		UR	Ti-Al6.65-Mo3.3 (large round/square bar)
OST1.90107-73		UR	Ti-Al6.65-Mo3.3 (round/square bar)
AIR T-A7D	(7-4)	FR	Ti-A17-Mo4
MIL-T-009047F Composition 9(*4)	(7-4)	US	Ti-A17-Mo4 (bar, forging stock)
MIL-F-83142A Composition 9	(7-4)	US	Ti-A17-Mo4 (forging/premium quality)
MIL-T-9047E Composition 9	alpha+beta	US	Ti-A17-Mo4 (bar, forging stock)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9047E Composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-81556 type III Composition D	(7-4)	US	Ti-Al7-Mo4 (extrusion, bar)
AMS 4970C	(7-4)	US	Ti-Al7-Mo4 (bar, forging)(sol. and precipitation treated)
AIR T-A8DV	(8-1-1)	FR	Ti-Al8-V1-Mo1
LW 3.7134 Werkstoff	(8-1-1)	GY	Ti-Al8-V1-Mo1
MIL-T-009047F Composition 5(*4)	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-F-83142A Composition 5	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging premium quality)
MIL-R-81558 type II Composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding rod wire)
MIL-T-9046H type II Composition F	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)
MIL-T-9047E Composition 5	alpha	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-81556 type II Composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (extrusion, bar)
AWS A5.16-70 ERTI-8Al-1Mo-1V	(8-1-1)	US	Ti-Al8-V1-Mo1 (bare welding rods)
AECMA Ti-P.65	(8-1-1)	EU	Ti-Al8-V1-Mo1 (bar, forging)
AMS 4972A	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, rod)(solution treated and stabilized)
AMS 4973A	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging)(solution treated and stabilized)
AMS 4916C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(duplex annealed)
AMS 4915C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(singel annealed)
AMS 4955	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding wire)
MIL-R-81558 type IV beta alloys		US	Ti-beta alloys (welding rod wire)
MIL-T-9046H type IV beta alloys		US	Ti-beta alloys (sheet, strip, plate)
AMS 4982		US	Ti-Cb/Nb 45 (bar, wire)(annealed)
AIR T-TU2	(IMI-230)	FR	Ti-Cu2.5
BS TA.24(*1) (see 2TA.24)	(IMI-230)	UK	Ti-Cu2.5
BS TA.23(*1) (see 2TA.23)	(IMI-230)	UK	Ti-Cu2.5
BS TA.22(*1) (see 2TA.22)	(IMI-230)	UK	Ti-Cu2.5
BS TA.21(*1) (see 2TA.21)	(IMI-230)	UK	Ti-Cu2.5
INTA L-7501(*5)	(IMI-230)	SP	Ti-Cu2.5
DTD 5123(*1)		UK	Ti-Cu2.5 (bar)
DTD 5133(*1)		UK	Ti-Cu2.5 (sheet)
LW 3.7124 (draft)	(IMI-230)	GY	Ti-Cu2.5 (all forms)

APPENDIX 8. (Continued)

Standard Number	Realted Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AECMA Ti-P.11	(IMI-230)	EU	Ti-Cu2.5 (all forms, annealed and heat treated)
BS 2TA.22	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)(annealed)
BA TA.53	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
DTD 5243(*1) (see TA.53)	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
DTD 5253(*1) (see TA.54)	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS TA.54	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS 2TA.23	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
DTD 5263(*1) (see TA.55)	(IMI-230)	UK	Ti-Cu2.5 (forging)
BS 2TA.24	(IMI-230)	UK	Ti-Cu2.5 (forging)(annealed)
BS TA.55	(IMI-230)	UK	Ti-Cu2.5 (forging)(solution heat treated and aged)
BS TA.58	(IMI-230)	UK	Ti-Cu2.5 (plate)(annealed)
DTD 5233(*1) (see TA.52)	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)
BS 2TA.21	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(annealed)
BS TA.52	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(solution heat treated and aged)
AMS 4908C	(C-110M)	US	Ti-Mn8 (sheet, strip)(annealed)
AMS 4923A(*1)		US	Ti-Mo2-Cr2-Fe2 (bar, forging)(annealed)
AIR T-D11ZR6E4	(Beta III)	FR	Ti-Mo 11.5-Sn4.5-Zr6
MIL-T-009047F Composition 13(*4)	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-F-83142A Composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (forging/premium quality)
MIL-T-9046H type IV Composition B	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
AMS 4977A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4980A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
MIL-T-9047E Composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
ASTM B348-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (billet, bar)
ASTM B338-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless/weld. heat exchanger treated)
ASTM B337-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless/welding pipe)
ASTM B265-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
BS 3003(part 9) TP.1	(Pd alloy)	UK	Ti-Pd0.15-0.25
BS TA.1(*1) (see 2TA.1)	(IMI-115)	UK	Ti-Pd0.15-0.25
DIN 3.7070(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DIN 3.7056(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
DIN 3.7040(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
DIN 3.7030(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15-0.25 (all forms)
AWS A5.16-70 ERTI-0.2Pd	(Pd alloy)	US	Ti-Pd0.15-0.25 (bare welding rods)
ASTM B348-74 grade 11	(Pd alloy)	US	Ti-Pd0.15-0.25 (billet, bar)
ASTM B348-74 grade 7	(Pd alloy)	US	Ti-Pd0.15-0.25 (billet, bar)
ASTM B367-69 grade C-7B	(Pd alloy)	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69 grade C-7A	(Pd alloy)	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69 grade C-8B	(Pd alloy)	US	Ti-Pd0.15-0.25 (casting)
ASTM B367-69 grade C-8A	(Pd alloy)	US	Ti-Pd0.15-0.25 (casting)
ASTM B381-75 grade F-11	(Pd alloy)	US	Ti-Pd0.15-0.25 (forging)
ASTM B381-75 grade F-7	(Pd alloy)	US	Ti-Pd0.15-0.25 (forging)
ASTM B338-74 grade 11	(Pd alloy)	US	Ti-Pd0.15-0.25 (seamless/weld. heat exchanger tubing)
ASTM B338-74 grade 7	(Pd alloy)	US	Ti-Pd0.15-0.25 (seamless/weld. heat exchanger tubing)
ASTM B337-74 grade 11	(Pd alloy)	US	Ti-Pd0.15-0.25 (seamless/welding pipe)
ASTM B337-74 grade 7	(Pd alloy)	US	Ti-Pd0.15-0.25 (seamless/welding pipe)
ASTM B265-74 grade 7	(Pd alloy)	US	Ti-Pd0.15-0.25 (sheet, strip, plate)
ASTM B265-74 grade 11	(Pd alloy)	US	Ti-Pd0.15-0.25 (sheet, strip, plate)
MIL-T-13405C		US	Ti-powder (pyrotechnic use)
MIL-T-12118A(*1)		US	Ti-sponge
INTA L-7021(*5)	(Pd alloy)	SP	Ti-Pd0.12-0.25
DTD 5333	(IMI-550)	UK	Ti-Al4-Mn4 (bar for machining)

Note: AMI=Advanced Material Information(SAE), ANS-American National Standard Institute.

(*1) Non current specification.

(*2) Non current but widely used in the past and may be required on some existing designs in the future-AMS does not recommend as standard material for future use in new design.

(*3) Non current uncoordinated specification.

(*4) Current uncoordinated specification.

(*5) Proposed specification.

**APPENDIX 9. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD. (KYNOCHE), BIRMINGHAM, ENGLAND;
COVERING THE IMI AND DTD ALLOY DESIGNATIONS AND COMPARING COMPOSITION WITH FORM AND
MECHANICAL PROPERTIES⁽⁶⁾**

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm ²	UTS N/mm ²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Creep Test : Max T.P.S. in 100h.
BS 2 TA1	115 260	Commercially pure Ti - 0.15 Pd.	Sheet and strip, annealed Sheet	200 min	290-420	25		≤1.83 mm 1t ≤3.25 mm 2t	
2 TA2	125	Commercially pure	Sheet and strip, annealed	290 min	390-540	22		≤2 mm 1.5t ≤3 mm 2t	
2 TA3 2 TA4	125 125	Commercially pure " "	Machining bar, annealed Forging stock	290 min	390-540	20			
2 TA5	125	Commercially pure	Forgings, annealed	290 min	390-540	20			
2 TA6	155	Commercially pure	Sheet and strip, annealed	460 min	570-730	15		≤2 mm 2½t	
2 TA7 2 TA8	160 160	Commercially pure " "	Machining bar, annealed Forging stock	430 min	540-740	16			
2 TA9	160	Commercially pure	Forgings, annealed	430 min	540-740	16			
2 TA10	318	Ti-6Al-4V	Sheet and strip, annealed	900 min	960-1260	8		5t	
2 TA11 2 TA12 2 TA13	318 318 318	Ti-6Al-4V " " " "	Machining bar, annealed Forging stock Forgings, annealed	830 min	900-1160	8	25		
TA14	317	Ti-5Al-2½Sn	Sheet, annealed	760 min	820-1080	10		≤2 mm 2t ≤3 mm 4½t	
TA15 TA16 TA17	317 317 317	Ti-5Al-2½Sn " " " "	Machining bar, annealed Forging stock Forgings, annealed	760 min	790-1080	9	25		
TA18 TA19 TA20	679 679 679	Ti-11Sn-2½Al-5Zr 1Mo-0.2Si " " " "	Machining bar heat treated Forging stock Forgings, heat treated	970 min	1110-1340	8	25		0.1% in 100h 368 N/mm ² at 450 C

APPENDIX 9. (Continued)

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm ²	UTS N/mm ²	Elongation (mm) 50mm % 5d %	RA %	Bend Radius	Creep Test - Max T.P.S. in 100h.
2 TA21	230	Ti-2%Cu	Sheet and strip, annealed	460-570	540-700	18		2t	
2 TA22	230		Machining bar, annealed	400 min	540-770	16	35		
2 TA23	230		Forging stock						
2 TA24	230		Forging, annealed						
TA25	679	Ti-11%2%Al-5%2%Mo-0.2%	Machining bar, heat treated	880 min	1030-1270	8	30		0.1% in 100h, 368 N/mm ² at 450 C
TA26	679		Forging stock						
TA27	679		Forging, heat treated						
2 TA28	336	Ti-6Al-4%	Extruded stock	970 min	1100-1380	8	20		
TA29, 37 superalloy									
TA38	551	Ti-4Al-4%Mo-2%	Machining bar, heat treated ~250mm	1090 min	1240-1420	8	20		
TA39	551		Forging stock						
TA40	551		Machining bar, heat treated ~150mm	1085 min	1205-1375	8	20		
TA41	551		Forging stock up to 75mm						
TA42	551		Forging, heat treated	1085 min	1205-1375	8	20		
TA43	685	Ti-6Al-5%2%Mo-2%	Forging stock	850 min	990-1140	6	15		0.1% in 100h, 300 N/mm ² at 520 C
TA44	685		Forging, heat treated						
TA45	550	Ti-3Al-2%2%Mo-2%	Machining bar, heat treated ~25mm	960 min	1100-1280	9	25		0.1% in 100h, 465 N/mm ² at 400 C
TA46	550		Forging stock ~100mm	920 min	1050-1220	9	20		
TA47	550		Forging stock 25-100mm	920 min	1050-1220	9	20		
TA48	550		Forging, heat treated ~100mm	920 min	1050-1200	9	20		
TA49	550		Machining bar, heat treated ~150mm	870 min	1000-1200	9	20		
TA50	550		Forging stock 100-150mm	870 min	1000-1200	9	20		
			Forging stock ~12.5mm discs	870 min	1100-1280	9	20		
TA51	550		Forging, heat treated ~150mm	870 min	1000-1200	9	20		

APPENDIX 9. (Continued)

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm ²	UTS N/mm ²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Crep Test . Max T.P.S. in 100h.
TA52	230	Ti-2%Cu	Sheet and strip, S.H.T. and aged	550 min	690-920	10		2t as S.H.T.	
TA53	230	"	Machining bar)	525 min	650-880	10			
TA54	230	"	Forging stock)						
TA55	230	"	Forgings S.H.T. and aged	525 min	650-880	10	25		
TA56	318	Ti-6Al-4V	Plate, annealed ≤ 10mm ≤ 25mm ≤ 100mm	825 min " "	895-1150 " "	10 8 8	25 20		
TA57	550	Ti-4Al-25Sn-4Mo-½Si	Plate, heat treated ≤ 10mm long LT ≤ 25mm long LT ≤ 65mm long LT ST	900 min 920 min 900 min 920 min 900 min 920 min 900 min	1030-1220 1050-1220 1030-1220 1050-1220 1030-1220 1050-1220 1030-1220	9 9 9 9 9 9 7	20 20 20 20 20 20		
TA58	230	Ti-2%Cu	Plate, annealed	420 min	520-640	20			

APPENDIX 9. (Continued)

DTD Specification	IMI Equivalent	Composition	Forms	0.2% PS N/mm ²	UTS N/mm ²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Creep Test T.P.S. in 100h
DT0 5013 B	115	Commercially pure	Bar and billet	200 min	463 min	25 on 4/A			
" 5023 C	130	"	Sheet and strip	340 min (0.1% PS)	463-618	20		≤1.8 mm 2t ≤3.2 mm 2½t	
" 5043 B	315	Ti-2Al-2Mn	Bar and billet	463 min (0.1% PS)	650-804	20 on 4/A			
" 5213	680	Ti-11Sn-2%Al-4Mo-0.25Si	Heat treated bar ≤1 in ≤3 in ≤6 in	1097 min 1066 min 1066 min	1236 min 1236 min 1206 min	8 8 4%			
			Forging stock ≤6 in >6 in	1097 min 1097 min	1236 min 1236 min	8 6			
" 5273	130	Commercially pure	Machining bar	310 min	460-615	16			
" 5283	130	"	Forging stock	310 min	460-615	16			
" 5303	318	Ti-6Al-4V	Machining bar, annealed up to 150 mm	830 min	930-1160	8	25		
" 5313	318	"	Forging stock up to 150 mm	830 min	930-1160	8	25		(0.1% TPS in 100h
" 5333	550	Ti-4Al-4Mo-2Sn-½Si	Machining bar up to 100 mm	940 min	1080-1260	9	20		(465 N/mm² at 400 C
" 5343	550	"	Forging stock up to 100 mm	"	"	"	"		(
" 5353	550	"	Forging up to 100 mm	"	"	"	"		(

APPENDIX 9.1. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD.; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH THE CORRESPONDING BRITISH STANDARDS, DTD SPECIFICATIONS, AND IMI ALLOY DESIGNATIONS⁽⁷⁾

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
NATIONAL SPECIFICATIONS			
<u>Ministry of Defence</u>	DTD 5013B	115	Bar and billet
	DTD 5023C	130	Sheet and strip
	DTD 5043B	315	Bar and billet
	DTD 5213	680	Bar and billet
	DTD 5273 Superseding	130	Machining bar
	DTD 5283 DTD 5003	"	Forging stock
	DTD 5303	318	Machining bar <150mm (60 ksi UTS)
	DTD 5313	318	Forging stock
	DTD 5323	"	Forgings
	DTD 5333	550	Machining bar <100mm (70 ksi UTS)
	DTD 5343	"	Forging stock
	DTD 5353	"	Forgings
BRITISH STANDARDS (AEROSPACE SERIES)	Superseding		
	2TA 1 DTD 5033	115	Sheet and strip (annealed)
	2TA 2	125	Sheet and strip (")
	2TA 3	"	Machining bar (")
	2TA 4	"	Forging stock (")
	2TA 5	"	Forgings (")
	2TA 6	155	Sheet and strip (")
	2TA 7	160	Machining bar (")
	2TA 8	"	Forging stock (")
	2TA 9	"	Forgings (")
	2TA 10 DTD 5163	318	Sheet (")
	2TA 11 DTD 5173	"	Machining bar (")
	2TA 12 DTD 5173	"	Forging stock (")
	2TA 13	"	Forgings (annealed)
	TA 14 DTD 5093	317	Sheet (")
	TA 15 DTD 5083	"	Bar (")
	TA 16 DTD 5083	"	Forging stock (")
	TA 17	"	Forgings (")
	TA 18	679	Bar
	TA 19	" O Q	Forging stock
	TA 20	"	Forgings
	2TA 21	230	Sheet (annealed)
	2TA 22	"	Bar (")
	2TA 23	"	Forging stock (")
	2TA 24 Superseding	"	Forgings (")
	TA 25	679	Bar
	TA 26	679 A C	Forging stock
	TA 27	679	Forgings
	2TA 28	318	Bolt stock
	TA 38 DTD 5203	551	Bar FHT) Sections up
	TA 39 DTD 5203	"	Forging stock) to 25mm
	TA 40 DTD 5203	"	Bar FHT) Sections up
	TA 41 DTD 5203	"	Forging stock) to 75mm
	TA 42 DTD 5223	"	Forgings)
	TA 43	685	Forging stock)
	TA 44	"	Forgings) 65mm LRS
	TA 45	550	Bar FHT LRS 25mm
	TA 46 (TA 29	"	Bar FHT LRS 100mm
	TA 47 (to	"	Forging stock " "
	TA 48 (TA 37	"	Forgings " "
	TA 49	"	Bar FHT LRS 150mm
	TA 50	"	Forging stock " "
	TA 51	"	Forgings " "
	TA 52 DTD 5233	230	Sheet, strip
	TA 53 DTD 5243	for	Machining bar
	TA 54 DTD 5253	STA	Forging stock
	TA 55 DTD 5263	condition	Forgings
(OTHERS)			
BS 3531 Part 1 Ti Metal Implants used For Bone Surgery	T 115, 125, 130, 155, 160, 318, 550 and 680	115, 125, 130, 155, 160, etc. respectively	
BS CP 3003 Part 9 1970 Lining of Vessels and Equipment for Chemical Processes	Grade 1 " 2 " 3 " 4 " 5 Alloy T P 1	115 125 130 155 160 260	
Draft ISO Standards for Surgical Implants	Ductile Ti Resilient Ti Alloy	115 155/160 318	

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
<u>NATIONAL</u>			
<u>SPECIFICATIONS</u>			
<u>FRANCE</u>			
<u>A.E.C.M.A.</u>			
	Ti P.01 DRAFT	115	All forms
	Ti P.02 "	125	All forms
	Ti P.04 "	155/160	All forms
	Ti P.05 "	130	Rivet wire
	Ti P.11 "	230	All forms, annealed and FHT
	Ti P.62 "	314	Bar, Forgings
	Ti P.63 "	318	Bar, Forgings, annealed sheet
	Ti P.64 "	6-6-2	Bar, Forgings, annealed and FHT
	Ti P.65 "	317	All forms
	Ti P.66 "	8-1-1	All forms
	Ti P.67 "	685	Bar, Forgings
	Ti P.68 "	550	Bar, Forgings
	AIR 9182 (T35)	115	Sheet
	" (T40)	125	Sheet
	" (T50)	130	Sheet
	" (T60)	160	Sheet
	AIR 9183 (TA4M)	314	Rod, Bar and Forgings
	" (TA6V)	318	"
	AIR 9184 (TA4M)	314	Bolts
	" (TA6V)	318	"
<u>NATIONAL</u>			
<u>SPECIFICATIONS</u>			
<u>GERMANY</u>			
<u>B.W.B. or LW</u>			
	3 7024 1	115	Sheet, welding wire
	3 7034 1	125	Sheet, rod, forgings, welding wire
	3 7064 1	155/160	Sheet, rod, forgings
	3 7114 (Draft)	317	All forms
	3 7124 (Draft)	230	All forms
	3 7154 (Draft)	685	Bar, billet
	3 7164 1	318	Sheet, rod, forgings
	3 7164 7	318	Bolt stock
	3 7174	6-6-2	
	3 7184 (Draft)	550	Bar, billet
<u>D.I.N.</u>			
	17850	C.P	All grades
	17860	C.P	Sheet, strip, annealed, all grades
	17862	C.P	Bar annealed, all grades
	17863	C.P	Wire annealed, all grades
	17864	C.P	Forgings annealed, all grades
	3 7025	115	
	3 7035	125	
	3 7055	130	
	3 7065	155/160	
<u>T.U.V.</u>			
	230-1-68 Group I	115	Sheet and solid forms
	" II	125	"
	" III	130	"
	" IV	155/160	"

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
U.S.	AMS 4900D	130	Sheet and strip
AERONAUTICAL	" 4901E	155	" " "
MATERIAL	" 4902B	125	" " "
SPECIFICATIONS	" 4906	318	Continuously rolled sheet, annealed
" 4907B	318 (ELI)		Sheet and strip
" 4908B	Ti-8Mn		" " "
" 4909B	317 (ELI)		" " "
" 4910F	317		" " "
" 4911C	318		" " "
" 4912A	Ti-4Al-3Mo-1V		Sheet and strip (SHT)
" 4913A	Ti-4Al-3Mo-1V		" " " (Fully H.T.)
" 4915B	8-1-1		Mild annealed sheet, strip & plate
" 4916B	8-1-1		Duplex annealed, sheet, strip & plate
" 4917B	Ti-13V-11Cr-3Al		Sheet and strip (SHT)
" 4918C	Ti-6Al-6V-2Sn		Sheet and strip
" 4921B	160		Bars, forgings
" 4923A	Ti-2Cr-2Fe-2Mo		"
" 4924B	317 (ELI)		Bars, forgings, rings
" 4925B	314		Bars, forgings
" 4926D	317		"
" 4927	Ti-5Cr-3Al		"
" 4928G	318		"
" 4929	Ti-5.4Al-1.4Cr-1.3Fe-1.25Mo		"
" 4930A	318 (ELI)		Bars, forgings, rings
" 4935B	318		Bar, rod, shapes, extrusions annealed
" 4936	6-6-2		Extrusions
" 4941	125		Welded tubing
" 4942	125		Seamless tubing
" 4943	3Al-2.5V		Hydraulic tubing
" 4951C	125		Wire, welding
" 4953	317		"
" 4954B	318		"
" 4955	Ti-8-1-1		"
" 4956	318 (ELI)		Welding wire ELI
" 4958B	318		Bars, forgings, STA
" 4960D	317		Forgings and forging stock
" 4967D	318		Forgings and forging stock for full Headin
" 4968A	Ti-5Al-5Zr-5Sn		Bars, billets
" 4969	Ti-5.4Al-1.4Cr-1.3Fe		Forgings
" 4970C	Ti-7Al-4Mo		Bars, forgings, fully H.T.
" 4971A	Ti-6Al-6V-2Sn		Bars, forgings, annealed, heat treatable
" 4972A	8-1-1		Bars and rings
" 4973A	8-1-1		Forgings
" 4974	679		Bars and forgings (A.C. aged)
" 4975B	6-2-4-2		Bars STA
" 4976	6-2-4-2		Forgings STA
" 4977A	Beta III		Bars and wire
" 4978A	6-6-2		Bars, forgings, rings, annealed
" 4979	6-6-2		Bars, forgings, rings, STA
" 4980A	Beta III		Bars and wire
U.S. MILITARY			
SPECIFICATIONS			
MIL-T-9046F	Superseding		
Type 1A Class 5	125		Sheet, strip, plate
" 1B Class 6	155		" " "
" 1C Class 7	130		" " "
" 11A Class 3	317		" " "
" 11B	317 (ELI)		" " "
" 11F	8Al-1Mo-1V		" " "
" 11G	6Al-2Nb-1Ta-0.8Mo		" " "
" 111A Class 1	8Mn		" " "
" 111B	4Al-3Mo-1V		" " "
" 111C Class 2	318		" " "
" 111D	318 (ELI)		" " "
" 111E	6Al-6V-2Sn		" " "
" 111G	6-2-4-2		" " "
" 11A	13V-11Cr-3Al		" " "
MIL-T-9011	CP		Bar, forgings
MIL-T-14577	Various		"
MIL-T-4603B	6-6-2		Bar, billet
MIL-T-46077	318		Bar, plate
OS 10737	318		Bar, billet, wire extrusions
MIL-T-9047E(General)	Comp 1 1A & 12	160	Bar, billet, forgings
MIL-T-9047F(USAF)	Comp 2 11A & 112	317	"
	Comp 3 11B & 113	317 (ELI)	"
	Comp 5 11D & 115	8-1-1	"
	Comp 6 111A & 1116	318	"
	Comp 7 111B & 1117	318 (ELI)	"
	Comp 8 111C & 1118	6-6-2	"
	Comp 9 111D & 1119	7-4	"
	Comp 10 111G & 11110	679	"
	Comp 11 111I & 11111	6-2-4-2	"
	Comp 12 11A & 11112	13-11-3	"
	Comp 13 11V13	Beta III	"
	Comp 14	6-2-4-6	"

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
A S.T.M. SPECS.	B.265-72 Grade 1	115	Sheet, strip, plate
	" " 2	125	" " "
(Note: ASME specs	" " 3	130	" " "
for the same products	" " 4	155	" " "
prefix the ASTM	" " 5	318	" " "
numbers with "S"	" " 6	317	" " "
e.g. SB265-71)	" " 7	260	" " "
SB337-65)	B.337-73 Grade 1	115	Seamless & welded unalloyed Ti pipe
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 7)	260	
	" " 8)		
	B.338-73 Grade 1	115	Seamless & welded unalloyed Ti tubing
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 7)	260	
	" " 8)		
	B.348-72 Grade 1	115	Bar and billet
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 5	318	
	" " 6	317	
	" " 7	314	
	B.363-71		Fittings
	B.367.69	130/150	Castings C1-C4 C.P
	" "	318	" C5 318
	" "	317	" C6 317
	B.381-69 F1	115	Forgings C7A 8B Ti Pd
	" F2	125	" "
	" F3	130	" "
	" F4	160	" "
	" F5	318	" "
	" F6	317	" "
	" F7	Ti-Pd	" "
	" F8	6-6-2	" "
	" F9	7Al-4Mo	" "
	B.382-61T)		Welding rods and electrodes
	AWS A5 16.70)		
	F67-69 Grade 3	130	Surgical implants
	F67-69 Grade 4	160	" "
	F136-70 6/4 alloy	318 (ELI)	" "

**APPENDIX 9.2. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD.; SUMMARIZING
APPLICATION AND USAGE PATTERNS FOR IMI TITANIUM AND TITANIUM ALLOYS⁽⁸⁾**

SECTION A : GENERAL CHEMICAL PLANT : COMMERCIAL PURE TITANIUM⁽⁸⁾

Environment	Type of Plant	Reason for Use
A1 Chlorine	Plate and tube-in-shell type heat exchangers, coils, valves, pumps, pipework and vessels. Noble metal coated titanium anodes.	Excellent corrosion resistance in wet chlorine and sodium chloride brine. Unique electrochemical properties.
A2 Chlorides : Sea water	Plate and tube-in-shell type heat exchangers in chemical plants and the oil industry. Marine and power station condensers, pumps, valves, super-cavitation propellers. Platinised titanium anodes for cathodic protection and electrodialysis. Desalination applications.	Unique corrosion and erosion resistance in pure and polluted sea water, even with high solids content.
A3 Chlorides : Metal chlorides	Plate and tube-in-shell type heat exchangers, vessels, pumps, valves, etc., in ferric chloride and other metal chlorides. heat exchangers, coils, baskets, jigs and pumps for nickel chloride plating. Sodium and calcium chloride brine evaporators and heat exchangers. Platinised titanium anodes.	Chemical and electro-chemical corrosion resistance.
A4 Oxidising acids : Nitric Acid	Plate and tube-in-shell type heat exchangers. vessels, pipework, valves, pumps and coolers.	Corrosion resistance in all concentrations, except red fuming, if titanium has an iron content less than 0.05%. Stainless steel is attacked by seawater and cupro-nickel by nitric acid; titanium resists both and is therefore ideal where seawater is used for cooling in nitric acid plants.
A5 Oxidising acids : Mixed nitric/sulphuric/hydrochloric acid	Coils, tanks etc.	Corrosion resistant if nitric acid of high concentration.
A6 Oxidising acids : Chromic acid	Plate and tube-in-shell type heat exchangers, vessels, coils, pumps, valves, jigs etc. Not recommended in fluoride catalysed chromium plating solutions.	Corrosion resistance
A7 Organic acids : acetic monochloroacetic terephthalic propionic etc. and mixed organic acids	Vessels and all plant items.	Corrosion resistance, often at high temperatures.
A8 Reducing acids : Sulphuric acid	Coils, vessels, pumps and valves.	In very low concentration, or where inhibited by heavy metal ions, oxidising agents, or anodically protected.
A9 Reducing acids : Hydrochloric acid	Coils, vessels, pumps and valves.	In very low concentrations, or where inhibited by heavy metal ions, oxidising agents, or anodically protected.
A10 Reducing acids : Hydrobromic acid	Coils, vessels, pumps and valves.	When free bromine present in certain concentrations.
A11 Bleaching liquors : Hypochlorite Chlorine dioxide	Tanks, rollers and heating elements.	More corrosion resistant than stainless steel in paper pulp and textile bleaching plant.
A12 Urea	Complete plant in contact with urea and ammonium carbonate.	Corrosion resistance even at higher temperatures.
A13 Fertilisers/ Pesticides	Plant items.	Corrosion resistance in nitric acid/ ammonium nitrate and in complex organic pesticides and herbicides.
A14 Artificial fibres plants : e.g. Terylene / Spin Nylon / bath Rayon / liquors also cellophane production	Various plant items.	Corrosion resistance.
A15 Organic solvents : plain or mixed	Solvent recovery plant, heating applications.	Corrosion resistant, especially where chloride and traces of H ₂ S contaminants as in dry cleaning and printing ink solvents.

APPENDIX 9.2. (Continued)

SECTION A : GENERAL CHEMICAL PLANT : COMMERCIAL PURE TITANIUM (Continued)⁽⁸⁾

Environment	Type of Plant	Reason for Use
A16 Food industry : e.g. soups pickles organic juices cider etc.	Various plant items.	Corrosion resistant and prevents contamination of product.
A17 Nuclear chemical processing	Various plant.	Guaranteed corrosion resistance - nitric acid is commonly used. Low half life.
A18 Dyes	Vessels, coils and heat exchangers.	Corrosion resistance and avoidance of contamination. Use excluded where hydrochloric or sulphuric acid present.
A19 Carbon black production (sulphur based gases present)	Various plant.	Corrosion resistance.
A20 Sulphur Sulphur dioxide Sulphur trioxide	Gas scrubbers and reaction columns.	Corrosion resistance.
A21 Pharmaceutical products	Various plant. (there are also applications for zirconium)	Corrosion resistance and non-contamination of products. Wide spread use of hydrochloric and sulphuric acids limits applications.

SECTION B : GENERAL AND ENGINEERING APPLICATIONS : COMMERCIAL PURE TITANIUM⁽⁸⁾

Environment	Type of Plant	Reason for Use
B1 Human body	Surgical implants.	Strength/weight ratio corrosion resistance, and non-toxicity.
B2 Corrosive gases e.g. Ammonia	Valve plates (Ti. 160, but more usually Ti 318)	Corrosion resistance.
B3 Various chemical plant	Centrifuges and instruments	Corrosion resistance, strength/weight ratio.
B4 Sea water	Underwater weapons, yacht fittings, marine condensers, submersibles, fittings for mine-sweepers	Corrosion/erosion resistance, strength, non-magnetic properties.
B5 Plating solutions	Plate and tube-in-shell type heat exchangers, thermoplates, coils, jigs, baskets, tanks and pumps.	Electro-chemical corrosion resistance.
B6 Anodising solutions Polishing solutions	Jigs, coils and tanks	Electro-chemical corrosion resistance.
B7 Electronic equipment	Various parts such as getters, grid supports, vacuum ion pump components.	Non-magnetism and other electrical characteristics, plus affinity for oxygen.
B8 Armaments	Bullet proof vests and shields.	Mechanical properties.
B9 Sulphuric acid Steel pickling solutions	Zirconium coils Zirconium plate and tube-in-shell type heat exchangers.	Corrosion resistance.
B10 Miscellaneous	Distilling plant parts, press tools for chemicals, spray nozzles, filament spools and spindles, springs etc.	Corrosion resistance and strength.

APPENDIX 9.2. (Continued)

SECTION C : APPLICATIONS FOR TITANIUM ALLOYS IN CHEMICAL AND GENERAL ENGINEERING⁽⁸⁾

Components	Reason for Use	IMI Titanium Alloy Grades
C1 Racing/sports car parts: connecting rods, suspension forgings, springs, nuts and bolts, etc.	High strength	(318 (550
C2 Valve plates	Corrosion resistance and strength	318
C3 Ultra centrifuges	High strength	(550 (680
C4 High speed pumps and propellers	Strength and corrosion/erosion resistance in seawater	318
C5 Steam turbine discs, blading, shroud bands, and lacing wire	High strength	680 318
C6 Ultrasonic probes	Fatigue resistance, low density, and corrosion resistance	318
C7 Submersibles	High strength and corrosion resistance	318
C8 Miscellaneous high strength/corrosion resistance applications in the chemical and allied industries		318
C9 Surgical implants	High strength and corrosion resistance	318

APPENDIX 9.2. (Continued)

SECTION D : APPLICATION FOR TITANIUM AND TITANIUM ALLOYS IN AEROSPACE ENGINEERING⁽⁸⁾

1. Unalloyed titanium and IMI 230 sheet are used in applications requiring cold or warm formability (temperatures up to about 350°C are commonly employed).
2. IMI alloy bar, billet, plate and sheet is used in applications requiring
 - (a) High strength/weight ratio (IMI 230, 318, 550, 551, 680)
 - (b) Creep resistance at temperatures up to about 500°C (IMI 318, 550, 679, 685).

Typical components made from the various grades of titanium and its alloys are shown in the tables below:

Components	IMI Alloys Used
<u>Aero Engines</u>	
Fan discs, intermediate and high pressure compressor discs.	(318 up to 325°C 550 up to 400°C 679 up to 450°C 685 up to 500°C
Fan blades, intermediate and high pressure compressor blades (stator and rotor)	(315 318 550 679 685
Spacer rings, stub shafts, cones.	(318 550 679 685
Engine casings and bypass ducts	(Unalloyed titanium 230
Casing Rings	(230 318
Engine inlet ducts, nose cones, cowlings, noise reduction linings.	Unalloyed titanium
Engine mounting brackets Pylon attachment brackets	318 550

Components	IMI Alloys Used
<u>Airframes</u>	
Firewalls, bulkheads, fuselage panels, wing fairings, de-icing and air conditioning ducts.	(Unalloyed Titanium 230 318
Fuselage keel	230
Attachment brackets	(318 550 551
Flap and slat tracks and associated brackets	550
Wing ribs, supports, brackets	(318 550 551
Engine tunnel skins	318
Arrester hooks and brackets	(318 550
Undercarriage components	(550 551
Brake Components	(318 550
Helicopter rotor heads, tail rotor shafts, brackets, engine support plates))) 318
<u>Accessories and Fittings</u>	
Pitot tube heads	Unalloyed Titanium
Refuelling probe attachments)) 551
Hydraulic pump casings)
Particle filter casings	230
Fasteners	230 318

APPENDIX 10. CORRELATION DATA COMPILED BY FRIED. KRUPP GMBH, KRUPP METALL-UND SCHMIEDEWERKE, ESSEN, WEST GERMANY; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH KRUPP TIKRUTAN TITANIUM ALLOYS⁽²¹⁾

International Specifications for Commercially Pure Titanium Grades⁽²¹⁾

KRUPP Brand TIKRUTAN®	WEST GERMANY			U S A			Great Britain	France	GDR	USSR	Europe
	DIN	VdTÜV	LW	ASTM	AMS	MIL-T	BS-TA	AIR	EMO	GOST	AECMA
RT 12	3.7025	Gr. I	3.7024	grade 1	—	—	—	T 35	Ti 110	VT 1-00	Ti-PO1
RT 12 Pd	(3.7030) ¹⁾	Gr. I	—	—	—	—	—	—	—	—	—
RT 15	3.7035	Gr. II	3.7034	grade 2	4902 4941	9046, 1A	2, 3, 4, 5	T 40	Ti 140	VT 1-0	Ti-PO2
RT 15 Pd	(3.7040) ¹⁾	Gr. II	—	grade 7	—	—	—	—	—	—	—
RT 18	3.7055	Gr. III	—	grade 3	4900	9046, 1C	—	T 50	—	VT 1-1	—
RT 18 Pd	(3.7056) ¹⁾	Gr. III	—	grade 8	—	—	—	—	—	—	—
RT 20	3.7065	Gr. IV	3.7064	grade 4	4901 4921	9046, 1B	6, 7, 8, 9	T 60	—	VT 1-2	Ti-PO4
RT 20 Pd	(3.7070) ¹⁾	Gr. IV	—	—	—	—	—	—	—	—	—

1) Proposed

VdTÜV = Vereinigung Der Technischen Überwachungsvereine Ev
(German Association for Technical Supervision)

International Specifications for Titanium Alloys⁽²¹⁾

KRUPP Brand TIKRUTAN	Designation	WEST GERMANY		U S A			Great Britain	France	USSR	Europe
		DIN	LW	ASTM	AMS	MIL-T	BS-TA	AIR	GOST	AECMA
LT 21	TiAl5Sn2,5	3.7115	3.7114	grade 6	4910, 4926 4966	9046, II A 9047, comp. 2	14, 15, 16	TA5E	VT5-1	Ti-P65
LT 22	TiAl8Mo1V1	—	3.7134	—	4915, 4916 4972, 4973	9046, II B 9047, comp. 5	—	TA8DV	—	Ti-P66
LT 24	TiAl6Sn2Zr4Mo2	—	3.7144	—	4975, 4976	9046, III G 9047, comp. 11	—	—	—	—
LT 25	TiCu2	—	3.7124	—	—	—	21, 22, 23, 24, 54, 55, 58	TU2	—	Ti-P11
LT 26	TiAl6Zr5MoSi	—	3.7154	—	—	—	43, 44	TA6ZD	—	Ti-P67
LT 31	TiAl6V4	3.7165	3.7164	grade 5	4906, 4911 4928, 4965	9046, III C 9047, comp. 6	10, 11, 12, 13, 56	TA6V	VT6S	Ti-P63
LT 32	TiAl7Mo4	—	—	—	4970	9047, comp. 9 9046, III E	—	TA7D	—	—
LT 33	TiAl6V6Sn2	—	3.7174	—	4918, 4971 4978, 4979	9047, comp. 8	—	TA6VE	—	Ti-P64
LT 34	TiAl4Mo4Sn2Si	—	3.7184	—	—	—	46, 47, 48, 49, 50, 51, 57	TA4DE	—	Ti-P68
LT 41	TiV13Cr11Al3	—	—	—	4917	9046, IV A 9047, comp. 12	—	—	—	—

APPENDIX 10. (Continued)

Halbzeuge aus Titan und Titanlegierungen (Semiproducts made of Ti and Ti alloys) (22)

– Standard-Fertigungsprogramm –
(Program of Standard Fabrication)

Halbzeug- form (Semiproduct)	Art der Formgebung (Shaping Method)	KRUPP- Marke TIKRUTAN	Kurz- Bezeichnung (Brief Alloy Designation)	Norm-Bezeichnung (Standard Designation)		Abmessungen (Dimensions)
				Flieg- Werkstoff- Nr (Aircraft Material Number)	AECMA	
Bleche (Sheet)	warmgewalzt (Hot Rolled)	RT 12 RT 15 RT 20 LT 25 LT 31	Ti99.8 Ti99.7 Ti99.5 TiCu2 TiAl6V4	3 7024 3 7034 3 7064 3 7124 3 7164	Ti-P01 Ti-P02 Ti-P04 Ti-P11 Ti-P63	(Minimum Sheet Thickness) min Blechdicke 15 mm 15 mm 15 mm 20 mm 10 mm Standardformat (Standard Sheet Size) 1000 x 2000 mm
		RT 12 RT 15 RT 20 LT 25	Ti99.8 Ti99.7 Ti99.5 TiCu2	3 7024 3 7034 3 7064 3 7124	Ti-P01 Ti-P02 Ti-P04 Ti-P11	(Minimum Sheet Thickness) min Blechdicke 0.4 mm Standardformat (Standard Sheet Size) 1000 x 2000 mm
	kaltgewalzt (Cold Rolled)	RT 12 RT 15 RT 20 LT 25	Ti99.8 Ti99.7 Ti99.5 TiCu2	3 7024 3 7034 3 7064 3 7124	Ti-P01 Ti-P02 Ti-P04 Ti-P11	(Minimum Sheet Thickness) min Blechdicke 0.4 mm Standardformat (Standard Sheet Size) 1000 x 2000 mm
		RT 12 RT 15 LT 25	Ti99.8 Ti99.7 TiCu2	3 7024 3 7034 3 7124	Ti-P01 Ti-P02 Ti-P11	(Minimum Band Thickness) min Banddicke 0.4 mm
Bänder (Band or Strip)	kaltgewalzt (Cold Rolled)	RT 12 RT 15 LT 25	Ti99.8 Ti99.7 TiCu2	3 7024 3 7034 3 7124	Ti-P01 Ti-P02 Ti-P11	(Minimum Band Thickness) min Banddicke 0.4 mm
		RT 12 RT 15 RT 20	Ti99.8 Ti99.7 Ti99.5	3 7024 3 7034 3 7064	Ti-P01 Ti-P02 Ti-P04	(Maximum Size) max Format 2000 x 9000 mm
	geschmiedet (Forged)	LT 31 LT 33	TiAl6V4 TiAl6V6Sn2	3 7164 3 7174	Ti-P63 Ti-P64	(Maximum Width) max Breite 1300 mm
		LT 31 LT 33 LT 34	TiAl6V4 TiAl6V6Sn2 TiAl4Mo4Sn2	3 7164 3 7174 3 7184	Ti-P63 Ti-P64 Ti-P68	(Minimum Thickness) min Dicke 30 mm
Stäbe (Rod)	geschmiedet (Forged)	RT 12 RT 15 RT 20 LT 22 LT 25 LT 26 LT 31 LT 33 LT 34	Ti99.8 Ti99.7 Ti99.5 TiAl8Mo1V1 TiCu2 TiAl6Zr5MoSi TiAl6V4 TiAl6V6Sn2 TiAl4Mo4Sn2	3 7024 3 7034 3 7064 3 7134 3 7124 3 7154 3 7164 3 7174 3 7184	Ti-P01 Ti-P02 Ti-P04 Ti-P66 Ti-P11 Ti-P67 Ti-P63 Ti-P64 Ti-P68	(Diameter) Durchmesser 20 – 350 mm min. Kantenlänge bei Flachstäben 20 mm (Minimum Edge Length, Wide Flat Bars) max. Breite Dicke 8 1 (Maximum Width/Thickness)
		RT 12 RT 15 RT 20 LT 22 LT 25 LT 31 LT 33	Ti99.8 Ti99.7 Ti99.5 TiAl8Mo1V1 TiCu2 TiAl6V4 TiAl6V6Sn2	3 7024 3 7034 3 7064 3 7134 3 7124 3 7164 3 7174	Ti-P01 Ti-P02 Ti-P04 Ti-P66 Ti-P11 Ti-P63 Ti-P64	(Diameter) Durchmesser 6 – 24 mm
	warmgewalzt, gezogen (Hot Rolled, Drawn)	RT 12 RT 15 RT 20 LT 22 LT 25 LT 31 LT 33	Ti99.8 Ti99.7 Ti99.5 TiAl8Mo1V1 TiCu2 TiAl6V4 TiAl6V6Sn2	3 7024 3 7034 3 7064 3 7134 3 7124 3 7164 3 7174	Ti-P01 Ti-P02 Ti-P04 Ti-P66 Ti-P11 Ti-P63 Ti-P64	(Diameter) Durchmesser 0.5 – 6.0 mm
		RT 12 RT 15	Ti99.8 Ti99.7	3 7024 3 7034	Ti-P01 Ti-P02	(Diameter) Durchmesser 0.5 – 6.0 mm
Draht (Wire)	(Hot Rolled, Drawn) warmgewalzt, gezogen	RT 12 RT 15	Ti99.8 Ti99.7	3 7024 3 7034	Ti-P01 Ti-P02	(Diameter) Durchmesser 0.5 – 6.0 mm
Schmiede- stücke (Forging)	geschmiedet (Forged)	alle Qualitäten (All Types)				(Minimum Forged Thickness) Kleinste Schmiededicke 30 mm max Gewicht 3000 kg (Maximum Weight)
Ringe (Ring)	gewalzt (Rolled)	alle Qualitäten (All Types)				

**APPENDIX 10.1. TABULAR DATA COMPILED BY KRUPP METALL-UND SCHMIEDEWERKE; SUMMARIZING
CHEMICAL COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES OF THE KRUPP
TIKRUTAN ALLOYS⁽²⁰⁾**

Table 1: Chemical Composition of Commercially Pure TIKRUTAN® Grades

Krupp Brand TIKRUTAN®	Code Nr. DIN ¹⁾	Aircraft industry	Standards TA	ASTM	Iron max.	Chemical composition Oxygen approx.	Nitrogen max	in per cent by weight Carbon max.	Hydrogen max.	(Ti balance) (Palladium)
RT 12 (Pd)	3.7025	3.7024	—	Grade 1	0.20	0.10	0.05	0.08	0.013 ²⁾	(0.15-0.25)
RT 15 (Pd)	3.7035	3.7034	TA 2-5	Grade 2	0.25	0.20	0.06	0.08	0.013 ²⁾	(0.15-0.25)
RT 18 (Pd)	3.7055	—	—	Grade 3	0.30	0.25	0.06	0.10	0.013 ²⁾	(0.15-0.25)
RT 20	3.7065	3.7064	TA 6-9	Grade 4	0.35	0.30	0.07	0.10	0.013 ²⁾	—

¹⁾ In addition to the code numbers listed in the above table, we also supply titanium to meet various end-user requirements. A low Fe-content can be guaranteed for material exposed to particular chemical attack.

²⁾ For sheet less than 2 mm thick and other semis less than 2 mm in diameter or comparable cross-section, hydrogen may be present in amounts up to 0.015 %.

Table 2: Physical Properties of Commercially Pure Titanium

Density	4.5 g/cm ³	4.5 kg/dm ³
Modulus of elasticity	11000 kp/mm ²	10800 hbar
Modulus of rigidity	4500 kp/mm ²	4400 hbar
Melting point	1700 °C	1975 K
Boiling point	3660 °C	3935 K
Transformation temperature (alpha/beta)	885 °C	1160 K
Crystal structure > 885 °C : > 1160 K	Body-centered cubic	
< 885 °C : < 1160 K	hexagonal	
Heat of transformation	16 cal/g	67 kJ/kg
Thermal neutron-capture cross-section	5.8 barn	5.8 · 10 ⁻²² dm ²
Specific heat at 15 °C/290 K	0.125 cal/g/°C	0.52 kJ/kg/K
Mean specific heat between 0 and 500 °C/ 275-775 K	0.139 cal/g/°C	0.58 kJ/kg/K
Heat of fusion	100 cal/g	419 kJ/kg
Thermal conductivity at room temperature	0.04 cal/cm/s	17 J/m/s/K
Mean coefficient of linear thermal expansion between 20 and 200 °C/295-475 K	9.1 · 10 ⁻⁶ /°C	9.1 · 10 ⁻⁶ /K
Electrical resistivity at 20 °C/295 K	0.50 Ω · mm ² /m	0.50 μm · W/A ²
Temperature coefficient of resistivity	0.43 · 10 ⁻² /°C	0.43 · 10 ⁻² /K
Magnetic properties	Paramagnetic	
Magnetic susceptibility	3.4 · 10 ⁻⁶ cm ³ /g	3.4 · 10 ⁻⁶ dm ³ /kg

APPENDIX 10.1. (Continued)

Table 3: Mechanical Properties of Commercially Pure TIKRUTAN® Grades

KRUPP Brand TIKRUTAN®	Code No. DIN	Standards		Condition	0.2% proof stress min. hbar	Tensile strength hbar	Elongation min. %		Reduction of area min. % 2)	Brinell hardness 30 kg load approx.	DVM impact value A _y min. J	Bend radius (105° bend)	
		TA	ASTM				1)	2)				Gauges t 2 mm	Gauges t 2-5 mm
RT 12 (Pd)	3,7025,10	—	grade 1	annealed, free from scale	18	29-41	30	25	35	120	60	1 t	1.5 t
RT 15 (Pd)	3,7035,10	TA 2-5	grade 2		25	39-54	22	20	30	150	35	1.5 t	2 t
RT 15 (Pd)	3,7055,10	—	grade 3		32	46-59	18	16	30	170	25	2 t	2.5 t
RT 20	3,7065,10	TA 6-9	grade 4		39	54-74	16	15	25	200	20	2.5 t	3 t

1) Sheet and strip as well as 2) forgings and bar stock: transverse specimens

3) Notched-bar impact test is carried out from gauges above 5 mm

Table 4: Chemical Composition of TIKRUTAN® Alloys

KRUPP Brand TIKRUTAN®	Designation	Type of alloy	Chemical composition in per cent by weight (Ti balance)											Zr	Cu	Si
			Fe max.	Interstitial elements				Al	V	Substitutional elements						
				O max.	H max.	N max.	C max.					Mo	Sn	Cr		
LT 21 1)	TiAl5Sn2.5	α	0.25	0.20	0.020	0.07	0.08	4.0-6.0	-	-	1.5-3.0	-	-	-	-	-
LT 22	TiAl8Mo1V1	$\alpha(\beta)$	0.30	0.15	0.015	0.05	0.08	7.5-8.5	0.75- 1.25	0.75- 1.25	-	-	-	-	-	-
LT 23	TiAl5Sn5Zr5	α	0.15	0.12	0.015	0.03	0.04	4.5-5.5	-	-	4.3-5.3	-	4.7-5.7	-	-	-
LT 24	TiAl6Sn2Zr4Mo2	$\alpha(\beta)$	0.25	0.12	0.015	0.05	0.05	5.5-6.5	-	1.8- 2.2	1.8-2.2	-	3.6-4.4	-	-	-
LT 25	TiCu2	α	0.20 (0.20)	0.010	0.05	0.1	-	-	-	-	-	-	-	2-3	-	-
LT 26	TiAl6Zr5MoSi	$\alpha(\beta)$	0.20	-	0.015	-	0.08	5.25- 6.75	-	0.25- 1.25	-	-	4.0-6.0	-	0.1- 0.4	-
LT 31 1)	TiAl6V4	$\alpha\beta$	0.25	0.20	0.013	0.07	0.08	5.5-6.5	3.5- 4.5	-	-	-	-	-	-	-
LT 32	TiAl7Mo4	$\alpha\beta$	0.25	0.20	0.013	0.07	0.08	6.5-7.3	-	3.5- 4.5	-	-	-	-	-	-
LT 33	TiAl6V6Sn2	$\alpha\beta$	0.35 -1.0	0.20	0.015	0.04	0.05	5.0-6.0	5.0- 6.0	-	1.5-2.5	-	-	-	-	-
LT 34	TiAl4Mo4Sn2	$\alpha\beta$	0.2	-	0.015	-	0.08	3-5	-	3-5	1.5-2.5	-	-	-	0.3- 0.7	-
LT 41	TiV13Cr11Al3	β	0.30	0.20	0.025	0.05	0.05	2.5-3.5	12.5- 14.5	-	-	10-12	-	-	-	-

1) These alloys are made with low percentages of interstitial elements for special low-temperature applications.

APPENDIX 10.1. (Continued)

Table 5: Physical Properties of TIKRUTAN® Alloys

Characteristic	Unit	TIKRUTAN® Grade				
		LT 21	LT 22	LT 23	LT 24	LT 25
Density	g/cm ³ kg/dm ³	4.46	4.37	4.59	4.55	4.56
Modulus of elasticity	kp/mm ² hbar	11,700 11,500	13,800 13,500	11,200 11,000	11,600 11,400	11,500 11,300
Thermal conductivity at room temperature	cal/cm/s/°C J/m/s/K	2.0 · 10 ⁻² 8.4	1.5 · 10 ⁻² 6.3	1.5 · 10 ⁻² 6.3	—	3.1 · 10 ⁻² 13
Mean coefficient of thermal expansion between 20 and 100 °C/293-373 K	m/m/°C m/m/K	9.4 · 10 ⁻⁴	8.5 · 10 ⁻⁴	9.0 · 10 ⁻⁴	9.5 · 10 ⁻⁴	9.0 · 10 ⁻⁴
Specific heat at 20 °C/293 K	cal/g/°C kJ/kg/K	0.127 0.53	0.127 0.53	0.121 0.51	—	—
Phase type at room temperature		α	$\alpha(\beta)$	α	$\alpha(\beta)$	α
Transformation temperature (alpha + beta) beta	°C K	1,020 1,295	1,040 1,315	990 1,265	990 1,265	880 1,155
Electrical resistivity	$\Omega \cdot \text{mm}^2/\text{m}$ $\mu\text{m} \cdot \text{W}/\text{A}^2$	1.57	2.0	—	—	0.65

Characteristic	Unit	TIKRUTAN® Grade				
		LT 26	LT 31	LT 32	LT 33	LT 34
Density	g/cm ³ kg/dm ³	4.45	4.43	4.48	4.54	4.60
Modulus of elasticity	kp/mm ² hbar	12,300 12,100	11,000 10,800	11,400 11,200	11,600 11,400	11,900 11,700
Thermal conductivity at room temperature	cal/cm/s/°C J/m/s/K	—	1.54 · 10 ⁻² 6.5	1.53 · 10 ⁻² 6.4	1.7 · 10 ⁻² 7.1	1.8 · 10 ⁻² 7.5
Mean coefficient of thermal expansion between 20 and 100 °C/293-373 K	m/m/°C m/m/K	10 · 10 ⁻⁴	8.6 · 10 ⁻⁴	8.85 · 10 ⁻⁴	9.4 · 10 ⁻⁴	8.8 · 10 ⁻⁴
Specific heat at 20 °C/293 K	cal/g/°C kJ/kg/K	—	0.134 0.56	0.123 0.515	0.155 0.65	—
Phase type at room temperature		$\alpha + \beta$	$\alpha + \beta$	$\alpha + \beta$	$\alpha + \beta$	$\alpha + \beta$
Transformation temperature (alpha + beta) beta	°C K	1,030 1,305	980 1,255	1,010 1,285	945 1,220	975 1,250
Electrical resistivity	$\Omega \cdot \text{mm}^2/\text{m}$ $\mu\text{m} \cdot \text{W}/\text{A}^2$	1.57	1.66	1.75	1.57	1.58

Table 6: Mechanical Properties of TIKRUTAN® Alloys

KRUPP Brand	Code No.	Condition	Dimen- sions mm	0.2 % proof stress min	Tensile strength min hbar	Tensile strength max hbar	Elonga- tion min %	Reduction of area min %
TIKRUTAN® LT 21 ¹⁾ (TiAl5Sn2.5)	3.7114	annealed	0.4-5.0	78	83	—	10	—
		annealed	< 100	76	79	—	10	—
TIKRUTAN® LT 22 (TiAl8Mo1V1)		annealed	0.6-5.0	86	93	—	10	—
		annealed	< 65	82	89	—	10	20
TIKRUTAN® LT 23 (TiAl5Sn5Zr5)		annealed	35-100	76	82	—	10	25
TIKRUTAN® LT 24 (TiAl6Sn2Zr4Mo2)	3.7144	aged	< 80	83	90	—	8	25
TIKRUTAN® LT 25 ²⁾ (TiCu2)	3.7124	annealed	0.4-5.0	46	54	—	15	—
		annealed	< 80	40	54	—	16	35
		aged	0.4-5.0	55	69	—	10	—
		aged	< 80	54	65	—	10	30
TIKRUTAN® LT 26 (TiAl6Zr5MoSi)	3.7154	aged	< 65	85	99	—	6	15
TIKRUTAN® LT 31 ³⁾ (TiAl6V4)	3.7164	annealed	0.6-2.0	87	93	—	8	—
		annealed	2.0-5.0	87	93	—	10	—
		annealed	< 80	83	90	—	10	25
		annealed	< 160	83	90	—	8	20
		aged	< 12.5	107	114	—	8	20
TIKRUTAN® LT 32 (TiAl7Mo4)		annealed	< 100	92	99	—	10	20
		aged	< 25	103	118	—	10	20
TIKRUTAN® LT 33 (TiAl6V5Sn2)	3.7174	annealed	0.6-5.0	100	107	—	8	10
		annealed	< 100	93	100	—	8	—
		aged	< 25	117	124	—	6	15
TIKRUTAN® LT 34 ⁴⁾ (TiAl4Mo4Sn2)	3.7184	aged	< 25	96	110	128	9	20
		aged	25-100	92	105	122	9	20
		aged	100-150	87	100	120	9	20
TIKRUTAN® LT 41 (TiV13Cr11Al3)		annealed	< 6.5	82	89	—	10	20
		aged	< 6.5	117	131	—	4	10

¹⁾ British Standards TA 14-TA 16

²⁾ British Standards TA 21-TA 24

³⁾ British Standards TA 10-TA 13

⁴⁾ British Standards TA 29-TA 37 (TA 45-TA 51)

All alloys can be supplied in accordance with official standards and specifications as well as customer specifications

**APPENDIX 11. CORRELATION DATA COMPILED BY THYSSEN EDELSTAHLWERKE AG, TITANIUM DIVISION,
(CONTIMET) KREFELD, WEST GERMANY; COMPARING VARIOUS INTERNATIONAL
STANDARDS WITH THE CONTIMET BRAND OF TITANIUM ALLOYS⁽¹⁸⁾**

Table 2 Specifications

CONTIMET® titanium and titanium alloys meet all international, national and customer specifications.

Grade (DIN Mat. No.)	Sheet, Strip Plate	Bars Forgings	Others
CONTIMET 35 (3.7025)	LW 3.7024 DIN 17 860 AICMA Ti-P 01 AIR 9182 T 35 VdTUV 230/I ASTM B 265 Gr. 1 DTD 5233	LW 3.7024 4) DIN 17 862 1) DIN 17 864 2) VdTUV 230/I ASTM B 348 Gr. 1 1) ASTM B 381 Gr. 1 1 2)	DIN 17 863 3) VdTUV 230/IV 3) ASTM B 337 Gr. 1 4) ASTM B 382 ERTi 4) DTI 5253 4)
CONTIMET 35 (3.7036)	LW 3.7034 DIN 17 860 AICMA Ti-P 02 AIR 9182 T 40 VdTUV 230/II ASTM B 265 Gr. 2 DTD 5233 AMS 4902 MIL-T-9046, I-A	LW 3.7034 DIN 17 862 1) DIN 17 864 2) AICMA Ti-P 02 VdTUV 230/II ASTM B 348 Gr. 2 1) ASTM B 381 Gr. F 2 1) DTD 5003 MIL-T-9047, 1	DIN 17 863 3) VdTUV 230/II 3) ASTM B 337 Gr. 2 4) ASTM B 382 ERTi 4) AMS 4951 4) AMS 4941 4) AMS 4942 4)
CONTIMET 35D (3.7055)	DIN 17 860 AICMA Ti-P 03 AIR 9182 T 50 VdTUV 230/III ASTM B 265 Gr. 3 AMS 4900 MIL-T-9046, I-C	DIN 17 862 1) DIN 17 864 2) VdTUV 230/III ASTM B 348 Gr. 3 1) ASTM B 381 Gr. F 3 1) MIL-T-9047, 1	DIN 17 863 3) VdTUV 230/III 3) ASTM B 337 Gr. 3 4) ASTM B 382 ERTi 4)
CONTIMET 55 (3.7065)	LW 3.7064 DIN 17 860 AICMA Ti-P 04 AIR 9182 T 60 VdTUV 230/IV ASTM B 265 Gr. 4 DTD 5063 AMS 4901 MIL-T-9046, I-B BS TA 6	LW 3.7064 DIN 17 862 1) DIN 17 864 2) AICMA Ti-P 04 VdTUV 230/IV ASTM B 348 Gr. 4 ASTM B 381 Gr. F 4 1) AMS 4921 MIL-T-9047, 1	DIN 17 863 3) VdTUV 230/IV 3) ASTM B 337 Gr. 4 4) ASTM B 382 ERTi 4)
CONTIMET Cu 2	LW 3.7124 4) AICMA Ti-P 11 BS TA 21 DTD Spec. 5233	LW 3.7124 4) AICMA Ti-P 11 BS TA 22, 23, 24 DTD 5243, 5253, 5262	
CONTIMET AlSn 52 (3.7115)	LW 3.7114 4) ASTM B 265 Gr. 6 AMS 4910 MIL-T-9046, II/A	LW 3.7114 4) ASTM B 348 Gr. 6 1) ASTM B 381 Gr. F 6 1) AMS 4926 1) AMS 4966 1) MIL-T-9047, 2	ASTM B 382 ERTi- 5 Al-2.5 Sn 4) AMS 4953 4)
CONTIMET AlMoV 8-1-1	AMS 4915 MIL-T-9046, II/E	AMS 4973 MIL-T-9047, 5	AMS 4955 4)
CONTIMET 685		LW 3.7154 4)	
CONTIMET AlSnZrMo 6-2-4-2	MIL-T-9046, III/G	MIL-T-9047, 11 AMS 4975 1) LW 3.7144 4)	
CONTIMET AlV 64 (3.7165)	LW 3.7164 AICMA Ti-P 63 AIR 9183 ASTM B 265 Gr. 5 AMS 4911 MIL-T-9046, III/C BS TA 10	LW 3.7164 AICMA Ti-P 63 AIR 9183 ASTM B 348 Gr. 5 1) ASTM B 381 Gr. F 5 1) AMS 4928 MIL-T-9047, 6 BS TA 11, 12, 13	ASTM B 382 ERTi- 6 Al-4 V 4) AMS 4954 4) AMS 4935 4) AMS 4967 18)
CONTIMET AlMo 74		MIL-T-9047, 9 AMS 4970	
CONTIMET AlVSn 6-6-2	LW 3.7174 4) AMS 4918 MIL-T-9046, III/E	LW 3.7174 4) AMS 4971, 4978 2) MIL-T-9047, 8	AMS 4979 18)
CONTIMET VCrAl 13-11-3	AMS 4917 MIL-T-9046, IV/A	MIL-T-9047, 12	
CONTIMET AlSn 52 ELL	MIL-T-9046, II-B AMS 4909	MIL-T-9047, 3 AMS 4924	
CONTIMET AlV 64 ELL	MIL-T-9046, III/D AMS 4907	MIL-T-9047, 7 AMS 4910	

- 1) Bars 3) Plate over 5.0 mm thickness 5) Wire 7) Seamless Tubes 9) In preparation
2) Forgings 4) Welding Rods 6) Tubes 8) Extrusions 10) Bars and Forgings, Heat Treatable

APPENDIX 11.1. TABULAR DATA COMPILED BY THYSSEN EDELSTAHLWERKE AG, TITANIUM DIVISION (CONTIMET); SUMMARIZING CHEMICAL COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES, CORROSION PROPERTIES, TYPICAL HEAT TREATMENTS, AND TYPICAL CHARACTERISTICS AND USAGE OF CONTIMET BRAND TITANIUM ALLOYS(18)

Table 1 CONTIMET Mill Products

Grade	Sheet and Strip	Plate	Bar	Wire	Forgings	Extrusion ¹⁾	Nonheat Tubes	Cold-rolled Tubes	Other Welded Tubes	Explosion-bonded Cladings ²⁾
CONTIMET 30	X	X	X	X	X	X	X	X	X	X
CONTIMET 35	X	X	X	X	X	X	X	X	X	X
CONTIMET 35 D	X	X	X	X	X	X	X	X	X	X
CONTIMET 55	X	X	X	X	X	X	X	X	X	X
CONTIMET Pd 02 30	X	X	X	X	X	X	X	X	X	X
CONTIMET Pd 02 35	X	X	X	X	X	X	X	X	X	X
CONTIMET Pd 02 35 D	X	X	X	X	X	X	X	X	X	X
CONTIMET Cu 2	X	X	X	X	X	X	X	X	X	X
CONTIMET AlSi 52	X	X	X	X	X	X	X	X	X	X
CONTIMET AlSi 52	X	X	X	X	X	X	X	X	X	X
CONTIMET AlMoV 8-1-1	X	X	X	X	X	X	X	X	X	X
CONTIMET 685	X	X	X	X	X	X	X	X	X	X
CONTIMET AlSiZrMo 6-2-4-2	X	X	X	X	X	X	X	X	X	X
CONTIMET AlV 64	X	X	X	X	X	X	X	X	X	X
CONTIMET AlVSn 6-6-2	X	X	X	X	X	X	X	X	X	X
CONTIMET AlSi 52 ELI	X	X	X	X	X	X	X	X	X	X
CONTIMET AlV 64 ELI	X	X	X	X	X	X	X	X	X	X

¹⁾ In cooperation with JTF Hager Inc., Monroe, Ga., U.S.A.
²⁾ Trade mark "Dynalene", produced in cooperation with Dynalene AG, Trossdorf, West Germany.
³⁾ 30 to 220 mm x d. and 6 mm minimum wall thickness

Table 4 Physical Properties

Typical Values

Grade	Coefficient of Linear Thermal Expansion between 20 and 100°C	Specific Heat between 20 and 400°C	Thermal Conductivity at 20°C	Specific Electrical Resistivity at 20°C	Modulus of Elasticity at 20°C	Density at 20°C	Relative Magnetic Permeability at 20°C
CONTIMET 30	9.4	0.125	0.037	0.56	105 000	4505	1.000178
CONTIMET 35	9.4	0.125	0.039	0.57	105 000	4505	1.000179
CONTIMET 35 D	9.4	0.125	0.039	0.57	105 000	4505	1.000179
CONTIMET 55	9.4	0.129	0.040	0.60	105 000	4505	1.000174
CONTIMET Pd 02 30	9.4	0.125	0.037	0.56	105 000	4505	1.000178
CONTIMET Pd 02 35	9.4	0.125	0.039	0.57	105 000	4505	1.000178
CONTIMET Pd 02 35 D	9.4	0.125	0.039	0.57	105 000	4505	1.000178
CONTIMET Cu 2	9.3	0.131	0.031	0.64	105 000	4560	1.000172
CONTIMET AlSi 52	9.5	0.135	0.019	1.57	130 000	4370	1.000172
CONTIMET AlMoV 8-1-1	9.4	0.127	0.014	1.99	130 000	4370	1.000172
CONTIMET 685	9.8	0.102	0.010	1.67	120 000	4450	1.000172
CONTIMET AlSiZrMo 6-2-4-2	9.6	0.128	0.014	1.91	115 000	4540	1.000178
CONTIMET AlV 64	9.3	0.135	0.017	1.71	115 000	4430	1.000178
CONTIMET AlVSn 6-6-2	9.4	0.155	0.017	1.57	115 000	4540	1.000178
CONTIMET AlSi 52 ELI	9.5	0.125	0.017	1.71	115 000	4480	1.000172
CONTIMET AlV 64 ELI	9.3	0.135	0.017	1.71	115 000	4450	1.000178

1 inch = 25.4 mm
 *enfilin = 10-45 N/mm²

Melting range between 1550 and 1700°C

Table 3 Chemical Composition

Unless specified otherwise, only the hydrogen content will be determined on the finished mill product. The analysis of the other elements is performed on the ingot.

Grade	Fe	C	N	O	H	Al	V	Others	Ti
CONTIMET 30	0.20	0.08	0.05	(0.10)	(0.125)				Balance
CONTIMET 35	0.25	0.08	0.06	(0.20)	(0.125)				Balance
CONTIMET 35 D	0.30	0.10	0.06	(0.35)	(0.125)				Balance
CONTIMET 55	0.35	0.10	0.07	(0.35)	(0.125)				Balance
CONTIMET Pd 02 30	0.22	0.08	0.05	(0.10)	(0.125)			> 0.15 Pd	Balance
CONTIMET Pd 02 35	0.25	0.08	0.06	(0.20)	(0.125)			> 0.15 Pd	Balance
CONTIMET Pd 02 35 D	0.30	0.10	0.06	(0.35)	(0.125)			> 0.15 Pd	Balance
CONTIMET Cu 2	0.20	0.10	0.05	0.00	0.00			2.0-3.0 Cu	Balance
CONTIMET AlSi 52	0.50	0.08	0.05	(0.30)	0.00			2.0-3.0 Sn	Balance
CONTIMET AlMoV 8-1-1	0.30	0.08	0.05	0.12	0.05			0.75-1.25 Mo	Balance
CONTIMET 685	0.20	0.08	0.05	0.15	0.00			4.0-6.0 Zr 0.25-0.75 Mo 0.10-0.30 Sn	Balance
CONTIMET AlSiZrMo 6-2-4-2	0.25	0.05	0.05	0.12	(0.125)			1.8-2.2 Sn 1.8-2.2 Mo	Balance
CONTIMET AlV 64	0.25	0.08	0.05	0.00	0.00			3.0-4.0 Ni	Balance
CONTIMET AlMoV 8-1-1	0.20	0.08	0.05	0.12	0.05			1.5-2.5 Sn	Balance
CONTIMET AlVSn 6-6-2	0.35-1.0	0.05	0.04	0.20	(0.125)			5.0-6.0 0.35-1.0 Cu	Balance
CONTIMET AlSi 52 ELI	0.15	0.08	0.05	0.12	0.025			2.0-3.0 Sn	Balance
CONTIMET AlV 64 ELI	0.15	0.08	0.05	0.13	0.025			2.0-3.0 Sn	Balance

¹⁾ Sheet below 2 mm thickness and wire below 2 mm diameter max. 0.25% H
²⁾ Sheet max. 0.25% H
³⁾ Sheet below 2.81 mm thickness max. 0.25% H

Table 5 Guaranteed Mechanical Properties - Annealed - at 20°C

Grade	Tensile Strength	0.2% Yield Strength	Elongation	Reduction of Area	Hardness	Minimum Brinell Hardness
CONTIMET 30	295-410	195	32	35	142	10
CONTIMET 35	395-542	275	22	32	182	15
CONTIMET 35 D	462-602	352	18	32	222	20
CONTIMET 55	512-715	442	16	32	222	25
CONTIMET Pd 02 30	395-410	195	32	35	142	10
CONTIMET Pd 02 35	395-542	275	22	32	182	15
CONTIMET Pd 02 35 D	462-602	352	18	32	222	20
CONTIMET Cu 2	542	452	15	35	222	25
CONTIMET AlSi 52	832	762	12	35	322	40
CONTIMET AlMoV 8-1-1	912	832	12	32	312	40
CONTIMET 685	912	832	12	32	312	40
CONTIMET AlSiZrMo 6-2-4-2	862	862	12	32	312	40
CONTIMET AlV 64	912	832	12	32	312	40
CONTIMET AlVSn 6-6-2	1272	1222	12	32	312	40
CONTIMET AlSi 52 ELI	725	682	12	32	292	40
CONTIMET AlV 64 ELI	912	832	12	32	312	40

¹⁾ Thickness 2.5 mm to 4 mm
²⁾ Up to 50 mm diameter. Longitudinally drawn and annealed sheets only.
³⁾ Sheet length 1.0 to 2.0 mm in 0.15 longitudinal direction and 0.15 transverse direction.
⁴⁾ No application of the standard used.

Table 5 (Continued)

CONTIMET AlMoSn 4-4-2 with following properties should be supplemented

Guaranteed minimum mechanical properties at RT in the STA condition (1H, 900 C/AC, 24H, 500 C/AC) are:

from MM BARS PLATES
to MM 25 100 5 65

Direction	L	L	L	L	L
UTS N/MM2	1100	1050	1030	1050	1050
0.2YS N/MM2	960	920	900	920	920
EL 0/0	9	9	9	9	9
R of A0/0	25	20	20	20	20

Table 6 Tensile Properties - Annealed - at Elevated Temperatures

Typical Values

Grade	Temperature °C	22	100	200	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
CONTIMET 30		335	275	165	135	122	245	165	125	122	92	53	62	75	65	65	65	65	65
CONTIMET 35		482	365	245	165	135	125	105	102	92	53	48	62	65	65	65	65	65	65
CONTIMET 35-10		532	452	325	210	175	165	155	150	122	92	52	42	55	62	58	62	58	58
CONTIMET 55		665	552	365	235	195	165	145	135	102	72	27	25	42	52	45	45	45	45

1 ksi = 6.90 N/mm²
1 tonf/in² = 15.45 N/mm²

Table 7 Tensile Properties - Solution Treated and Aged

Guaranteed Minimum for Bars at 20 °C

Grade	Product	Free Dimensions min	22 % Yield Strength N/mm ²	Ultimate Tensile Strength N/mm ²	Elongation (L ₀ = 4 L ₀) %	Reduction of Area %
CONTIMET Cu 2	Bars	92	540	650	12	30
CONTIMET Cu 2	Sheet	5	550	690	12	15
CONTIMET 685	Bars	65	850	990	6	15
CONTIMET AlV 64	Bars	25	1030	1120	10	20
CONTIMET AlVSn 6-6-2	Bars	25	1172	1242	8	20
CONTIMET VCA 1 + 2	Bars	50	1100	1170	4	10

Typical Values at Elevated Temperatures

Grade	Temperature °C	22	100	200	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
CONTIMET Cu 2		795	655	592	492	410	360	24	27	25	26	32							
CONTIMET 685		1210	845	785	735	720	645	600	520	10	15	18	19						
CONTIMET AlV 64		1180	1000	910	835	735	1070	785	735	685	590	12	14	13	13	18			
CONTIMET AlVSn 6-6-2		1315	1115	1000	785	1242	942	735	1242	942	735	9	9	9	10				

1) Bars < 32 mm diameter

Table 7 (contd.)

Guaranteed Minimum at 20 °C Depending on Section Size

CONTIMET AlV 64

Thickness mm	Width mm	Ultimate Tensile Strength N/mm ²	22 % Yield Strength N/mm ²	Elongation %	Reduction of Area %
12.5-25	< 100	1070	1020	10	20
25-40	< 100	1030	960	10	20
40-50	< 100	1020	930	10	20
50-75	< 100	960	890	10	20

CONTIMET AlVSn 6-6-2

Thickness mm	Width mm	Ultimate Tensile Strength N/mm ²	22 % Yield Strength N/mm ²	Elongation %	Reduction of Area %
< 25	< 25	1242	1172	8	20
25-40	< 25	1242	1172	8	20
40-50	< 25	1172	1102	8	20
50-75	< 25	1102	1032	8	20
75-100	< 25	1072	1002	8	20
100-125	< 25	1002	932	8	20
125-150	< 25	962	892	8	20

1 ksi = 6.90 N/mm²
1 tonf/in² = 15.45 N/mm²

Table 9 Design Allowables for Pressure Vessels and Tubes

Design Allowables for Pressure Vessels and Tubes

Typical Values				
Grade	Temperature in °C	Ultimate Tensile Strength N/mm ²	2.2% Yield Strength N/mm ²	Elongation %
	+32	-34	+32	+32
		-196	-213	-196
		-253	-268	-253
CONTIMET A100 42 ELT	805	1352	715	16
CONTIMET A100 64 ELI	932	1522	865	13
CONTIMET A100 80 ELI				6

0.1% — Creep Strength for 150 and 300 hours in N₂ mm²

Grade	Temperature in °C	Raman Necked Tensile Strength					Stress Concentration Factor				
		σ_{Bk}	σ_B	σ_{Bk}/σ_B	1912	1865	1912	1712	13	6	
		≈ 20	≈ 14	≈ 146			≈ 253				
CONTIMET AIV 64 ELI		1.38	1.26	1.01	6.3						
CONTIMET AIV 52 ELI		1.27	2.95	2.32	6.3						

Table 12 **Heat Treatment**

Sample	Stress Regime	Annealing Recrystallization	Substrate Treatment and Anneal or Inhibitor Annealing (s)
CONTIMT 15	125-15 mins, 452-652 °C	10-120 mins, 700-725 °C	
CONTIMT 16			
CONTIMT 17 D			
CONTIMT 18			
CONTIMT 19			
CONTIMT P4 22 32	125-15 mins, 452-652 °C	10-120 mins, 700-725 °C	
CONTIMT P4 23 35			
CONTIMT P4 22 33 D			
CONTIMT Cu 2	12 mins, 622 °C	1-8 h, 820 °C	62 mins, 812 °C AC 24 h, 422 °C + 2 h, 652 °C
CONTIMT T AlNiSi 52	62-15 mins, 542-652 °C AC	240-15 mins, 720-942 °C AC	1 h, 925, 1242 °C AC, not AQ + 3 h, 548 °C AC ¹⁾
CONTIMT T AlMgSi 5 11	62-15 mins, 652-702 °C AC	792 °C A	15-62 mins, 1252 °C AC + 2 h, 532 °C AC
CONTIMT 6A5	4-1 h, 452 °C-652 °C AC		1 h, 925-955 °C AC + 2 h, 548 °C AC
CONTIMT T AlNiZrMo 2 4 2	4-1 h, 452-652 °C AC	1-1 h, 702-842 °C AC	62-15 mins, 822-932 °C AC + 2 h, 548 °C AC
CONTIMT AlV 64	4-1 h, 452-652 °C AC	1-1 h, 702-820 °C AC	8-1 h, 452-652 °C AC + 2 h, 442-652 °C AC
CONTIMT AlVNi 6 6 2	4-2 h, 452-652 °C AC	1-1 h, 652-720 °C AC	8-1 h, 452-652 °C AC + 2 h, 442-652 °C AC
CONTIMT AlNiSi 52 111	62-15 mins, 542-652 °C AC	242-15 mins, 702-820 °C AC	
CONTIMT AlV 64 111	1-4 h, 452-652 °C AC	1-1 h, 702-820 °C AC	not recommended

**APPENDIX 12. CORRELATION DATA COMPILED BY OTTO FUCHS METALLWERKE, WEST GERMANY;
COMPARING VARIOUS INTERNATIONAL STANDARDS WITH THE OTTO FUCHS BRAND
TITANIUM ALLOYS⁽²⁵⁾**

Fuchs Designation	Grade	Corresponding Material Designations											
		Company Specification	LN	DIN	AICMA	AMS	MIL T 9047 D	France AISI 9183	DTD	BS	Continet	IMI	Krupp
T 2	Ti 99.5		3 7024	3 7025	Ti P 01		—	T 35	—	TA 5	30	115	RT 12
T 3	Ti 99.4		3 7034	3 7035	Ti P 02	4902	—	T 40	5003 B	TA 5	35	125	RT 15
T 6	Ti 99.2		3 7064	3 7065	Ti P 04	4921 A	Comp II A	T 60	—	TA 9	55	160	RT 20
TP 02	Ti Pd 0.15		—	—	—	—	—	—	—	—	Pd 02	260	RT Pd
TA 52	Ti Al5 Sn2.5		3 7114	3 7115	—	4966 B	Comp III A	TA 5E	5063	—	AlSn52	317	LT 21
TC 2	Ti Cu2		—	—	—	—	—	—	5123	TA 24	—	230	LT 25
TA 64	Ti Al6 V4		3 7164	3 7165	Ti P 63	4928 E	Comp III A	TA 6V	5173	TA 13	AlV64	318	LT 31
TA 44	Ti Al4 Mo4 Sn2		—	—	—	—	—	—	5153	TA 34	—	550	LT 34
TA 74	Ti Al7 Mo4		—	—	—	4970 A	Comp III D	—	—	—	AlMo74	—	LT 32
TA 66	Ti Al6 V6 Sn2		3 7174	—	Ti P 64	4971	Comp III C	—	—	—	AlVSn662	—	LT 33

**APPENDIX 12.1. TABULAR DATA COMPILED BY OTTO FUCHS METALLWERKE; SUMMARIZING CHEMICAL
COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES OF OTTO FUCHS BRAND
TITANIUM ALLOY CHARACTERISTICS⁽²⁵⁾**

Physical Properties		Pure Titanium T 2 T 3, T 6 (TP 02)	Titanium Alloys					
			TA 52	TC 2	TA 64	TA 44	TA 74	TA 66
Density	g/cm ³	4.5	4.46	4.56	4.43	4.60	4.48	4.54
Modulus of Elasticity	kp/mm ²	11,000	11,700	11,000	11,000	11,700	11,400	11,600
Thermal Conductivity (room temperature)	cal/cm s °C	0.04	0.02	0.031	0.015	0.015	0.015	0.017
Coefficient of Thermal Expansion (20-100° C)	m/m °C x 10 ⁻⁶	9.1	9.4	9.02	8.6	8.8	8.85	8.85
Specific Heat	cal/g °C	0.125	0.127	0.15	0.134	0.15	0.123	0.155
Specific Electrical Resistance	Ω mm ² /m	0.5	1.57	0.75	1.66	1.65	1.75	1.57
Transformation Temperature	° C	885	1020	895	980	975	1040	945
Rupture Length 2σ _{1/2} (thickness below 12 mm)	m min	665 - 1670	1800	1200	2260	2520	2660	2780
Magnetic Behaviour		Paramagnetic						

Transverse Mechanical Properties in the Heat-Treated Condition (STA)

Transverse Mechanical Properties in the Heat-Treated Condition (STA)

The mechanical properties are greatly affected by the actual cross section and size of the material, particularly if it is in the heat-treated condition. In the case of large sections, heat-treatment response will be inadequate.

Fuels Daiglaion	Thickness (mm)	Width (mm)	Tensile Strength 24 min kg mm ²	Pical Stress 1 min kg mm ²	Elongation h min %	Reduction in Area %
FC 2	—	—	66	54	8	20
TA 64	Up to 12 12 — 25 25 — 37 37 — 50 50 — 75 75 — 100	Below 200 Below 100 100 — 200 Below 100 100 — 200 Below 100 100 — 200	112 108 105 105 107 107 98	105 102 96 96 95 92 87	6 6 6 6 6 6 5	15 15 15 15 15 15 15
TA 44	Up to 75 mm	Below 200	107 — 130	92	9	20
TA 74	Below 25 25 — 50 50 — 100	Below 100 100 — 200 200 — 300	119 112 105	117 105 98	6 6 6	20 20 20
TA 66	Below 25 25 — 50 50 — 75 75 — 100	Below 25 25 — 50 50 — 75 75 — 100	126 119 116 112	119 112 107 98	5 5 5 5	12 12 12 12

^a Where no German standards are available yet the above minimum values have been taken from MIL-T 9007-D. (The figures for TA 44 and TC 2 have been provided by the producers). For converting λ -to λ -elongation values a correction factor of approx. 0.8 was used.

For conversion into "bar", reduce the kg/mm² values by approx 2.45

For a comparison with the β -elongation values normally used in the U.S.A. increase the β -figures by approx. 20 %

Mean value

Grade	Mechanical Properties in the Annealed Condition				Reduction in Area		Burrless Hardness (Approx.) H _{RC} 1/16" min.	Characteristics
	Tensile Strength T _s 1/16" min.	Proof Stress P _{0.2} 1/16" min.	Elongation N _{1/2} %	N ₅ %	ψ ₂	ψ ₄		
Ti 99.5	30 - 42	min 20	min 25		min 25		min 100	Good weldability, high corrosion resistance and excellent formability
Ti 99.4	40 - 55	min 26	min 20		min 30		min 140	Slightly higher strength. Otherwise as above
Ti 99.2	55 - 75	min 45	min 15		min 30		min 170	Moderate weldability, highest strength of all unalloyed titanium grades. Otherwise as above
Ti 99.0	min 45	min 35	min 18		min 30		min 180	The addition of palladium to this alloy gives excellent resistance to the corrosive attack of hydrochloric acid and other reducing media
Ti AISI 304.3	min 90	min 77	min 10		min 20		min 270	Weldable alpha alloy of medium strength. Good strength-temperature strength, high creep resistance in the 200-500 °C range and moderate formability
Ti Cu31	min 55	min 36	min 18		min 35			Weldable, heat treatable alloy of medium strength. Excellent formability. After heat treatment its properties are similar to those of Ti 32
Ti AISI V4	min 90	min 84	min 10		min 20		min 300	Most widely used heat treatable, high strength titanium alloy for all applications. Limited weldability, good formability
Ti AISI 602	This alloy is only used in the heat treated condition (refer to table below)							Mainly used for British aircraft projects
Ti AISI 42-4	min 120	min 95	min 10		min 20		min 330	This alloy offers higher strength than Ti 34, and other alpha-beta alloys can be heat treated. For new projects the use of Ti 64 or Ti 66 is recommended
Ti AISI V6-Si2	min 102	min 99	min 8		min 15		min 330	Premium strength alloy of good heat treatment response. V4-V6 require length and good formability

**APPENDIX 13. TABULAR DATA COMPILED BY USSR; SUMMARIZING DETAILED CHEMICAL COMPOSITION OF THE SOVIET
TITANIUM AND TITANIUM ALLOYS AND SOVIET TITANIUM SPONGE
(From the 1975 book, "The Use of Titanium in the National Economy")⁽⁸⁵⁾**

Chemical Composition of Wrought Titanium Alloys, OST 90013-71														
Chemical Composition, %														
Alloy Designation		Alloying Elements					Impurities, not more than							
		Al	Mn	Mo	V	Zr	Cr	Sn	Si	Fe	C	Fe	Si	Total Other Impurities
VT1-00	BT1-00	-	-	-	-	-	-	-	-	-	0.05	0.20	0.08	0.10
VT1-0	BT1-0	-	-	-	-	-	-	-	-	-	0.07	0.30	0.10	0.30
OT4-0	OT4-0	0.2-1.4	0.2-1.3	-	-	-	-	-	-	-	0.10	0.30	0.15	0.30
OT4-1	OT4-1	1.0-2.5	0.7-2.0	-	-	-	-	-	-	-	0.10	0.30	0.15	0.30
OT4	OT4	3.5-5.0	0.8-2.0	-	-	-	-	-	-	-	0.10	0.30	0.15	0.30
VT5-1	BT5-1	4.0-6.0	-	-	-	-	-	2.0-3.0	-	-	0.10	0.30	0.15	0.30
VT5	BT5	4.3-6.2	-	-	-	-	-	-	-	-	0.10	0.30	0.15	0.30
VT6C	BT6C	5.0-6.5	-	-	3.5-4.5	-	-	-	-	-	0.08	0.25	0.15	0.30
VT6	BT6	5.5-7.0	-	-	4.2-6.0	-	-	-	-	-	0.10	0.30	0.15	0.30
VT3-1	BT3-1	5.5-7.0	-	2.0-3.0	-	-	0.8-2.3	-	0.15-0.40	0.2-0.7	0.10	-	-	0.30
VT8	BT8	6.0-7.3	-	2.8-3.8	-	-	-	-	0.20-0.40	-	0.10	0.30	-	0.30
VT9	BT9	5.8-7.0	-	2.8-3.8	-	0.8-2.0	-	-	0.20-0.35	-	0.10	0.25	-	0.30
VT14	BT14	3.5-6.3	-	2.5-3.8	0.9-1.9	-	-	-	-	-	0.10	0.30	0.15	0.30
VT15	BT15	2.3-3.6	-	6.8-8.0	-	-	9.5-11.5	-	-	-	0.10	0.30	0.15	0.30
VT16	BT16	1.6-3.0	-	4.5-5.5	4.0-5.0	-	-	-	-	-	0.10	0.30	0.15	0.30
VT20	BT20	5.5-7.5	-	0.5-2.0	0.8-1.8	1.5-2.5	-	-	-	-	0.10	0.25	0.15	0.30
VT22	BT22	4.4-5.9	-	4.0-5.5	4.0-5.5	-	-	-	-	-	0.10	0.30	0.15	0.30
AT3**	AT3	2.0-3.5	-	-	-	-	0.5-2.0	-	-	0.5-1.5	0.10	-	-	0.30
AT6**	AT6	5.0-6.5	-	-	-	-	0.2-0.5	-	0.2-0.4	0.2-0.5	-	-	-	0.30
4200**	4200	-	Pd	-	-	-	0.3-0.9	-	0.2-0.4	0.25-0.6	-	-	-	0.30
as specified by purchaser														
4201**	4201	-	0.15-0.30	31-35.0	-	-	-	-	0.07	0.18	0.10	-	0.12	0.04
		-	-	-	-	-	-	-	0.10	0.25	0.10	0.30	0.12	0.04
		-	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Composition of Cast Titanium Alloys														
Chemical Composition, %														
Alloy Designation		Alloying Elements					Impurities, not more than							
		Al	Mn	Mo	V	Zr	Cr	Sn	Si	Fe	C	Fe	Si	Total Other Impurities
VT1L	BT1L	-	-	-	-	-	-	-	-	-	0.15	0.3	0.15	0.3
VT5L	BT5L	4.1-6.2	-	-	-	-	-	-	-	-	0.20	0.35	0.20	0.3
VT6L	BT6L	5.0-6.5	-	-	3.5-4.5	-	-	-	-	-	0.10	0.3	0.15	0.3
VT3-1L	BT3-1L	5.3-7.0	-	2.0-3.0	-	-	0.8-2.3	-	0.15-0.4	0.2-0.7	0.15	-	-	0.3
VT9L	BT9L	5.6-7.0	-	2.8-3.8	-	0.8-2.0	-	-	0.20-0.35	-	0.15	0.30	-	0.3
VT14L	BT14L	4.3-6.3	-	2.5-3.8	0.9-1.9	-	-	-	-	-	0.12	0.6	0.15	0.3

* Balance titanium.
** Chemical composition according to the literature.

APPENDIX 13. (Continued)

		Chemical Composition of Sponge Titanium									
Technical Standard	Titanium Sponge		Chemical Composition, %								
	Designation		Impurities, not more than								
	Latin	Cyrillic	Ti	Fe	Si	Ni	C	Cl ₂	N ₂	O ₂	
GOST 17746-72	TG-90	ТГ-90	Balance	0.06	0.01	0.05	0.02	0.08	0.02	0.04	
	TG-100	ТГ-100	"	0.07	0.02	0.05	0.03	0.08	0.02	0.04	
	TG-110	ТГ-110	"	0.09	0.03	0.05	0.03	0.08	0.02	0.05	
	TG-120	ТГ-120	"	0.11	0.03	0.05	0.04	0.08	0.03	0.06	
	TG-130	ТГ-130	"	0.13	0.04	0.05	0.04	0.10	0.03	0.08	
	TG-150	ТГ-150	"	0.2	0.04	0.05	0.05	0.12	0.04	0.10	
	TG-TV	ТГ-ТВ	"	2.0	—	—	0.15	0.3	0.3	—	
GOST 5,303-69	TG-100	ТГ-100	"	0.06	0.02	0.05	0.03	0.08	0.02	0.04	
	TG-105	ТГ-105	"	0.07	0.02	0.05	0.03	0.08	0.02	0.05	

ALLOY INDEX
(Alphanumeric by Alloy Designation)

ALLOY INDEX

The Alloy Index is the "key" to entering Table 1, which gives detailed information on each alloy. The Index shows the alloy designation and the index number where the alloy can be found in Table 1.

In a computer generated index the ordering may be different than one would ordinarily expect. For example, the use of a period, a hyphen or dash, or a blank space will change the mechanical ordering. See TA 44 through TA.58, page Index-7; T-A2M through T-60, page Index-9; and T3M through T 995, page Index-8.

ALLOY INDEX TO TABLE 1

ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.
AB 102	814	AlSiZnMo 6.2.4.2	611	AMS 4370C	769
AB 104	861	AlSiZnMo 6.2.4.2	607	AMS 4971A	721
AB 105	955	AlSn 52 ELI	509	AMS 4972A	791
AB 106	849	AlSn 52	512	AMS 4973A	797
AB 203	566	AlSn 52	512	AMS 4974	327
AB 207	423	AlVSn 6.6.2	567	AMS 4975B	601
AB 209	650	AlV 64 ELI	634	AMS 4976	595
AB 210	757	AlV 64	679	AMS 4977A	775
AECMA Ti P 05	257	AlV 64	680	AMS 4978A	731
AECMA Ti P 11	841	AMS 4900D	83	AMS 4979	722
AECMA Ti P 63	662	AMS 4901E	51	AMS 4980A	872
AECMA Ti P 64	738	AMS 4902B	127	AMS 4981	615
AECMA Ti P 65	505	AMS 4906	696	AMS 4982	811
AECMA Ti P 66	784	AMS 4907C	718	AMS	857
AECMA Ti P 67	572	AMS 4908C	855	Armco Beta 3*	866
AECMA Ti P 68	437	AMS 4908B	551	Armco Ti-40	117
AIR-9182 (T40)	221	AMS 4910F	545	Armco Ti-5Al-2.5Sn*	521
AIR-9182 (T50)	220	AMS 4911C	697	Armco Ti-55*	78
AIR-9182 (T60)	242	AMS 4912A	471	Armco Ti-6Al-2Sn-4Zr-6Mo	619
AIR-9182 (T35)	222	AMS 4913A	470	Armco Ti-6Al-4V	653
AIR-9183 (TA4M)	412	AMS 4915B	790	Armco Ti-6Al-6V-2Sn*	735
AIR-9183 (TA6V)	670	AMS 4916B	795	Armco Ti-70*	29
AIR-9184 (TA4M)	411	AMS 4917B	384	Armco Ti-8Al-1Mo-1V*	767
AIR-9184 (TA6V)	674	AMS 4918D	727	ASTM B265, Grade 10	869
AK-3	316	AMS 4921B	50	ASTM B265, Grade 10	879
Alloy	678	AMS 4923A*	860	ASTM B265, Grade 11	888
Alvac Ti-38.6.4.4	373	AMS 4924B*	550	ASTM B265, Grade 11	890
Alvac 13.11.3	388	AMS 4925B	422	ASTM B265, Grade 1	133
Alvac 18.5	294	AMS 4926D	546	ASTM B265, Grade 1	138
Alvac 30	194	AMS 4927*	345	ASTM B265, Grade 2	110
Alvac 32.5	366	AMS 4928G	693	ASTM B265, Grade 2	109
Alvac 40-Pd	924	AMS 4929*	562	ASTM B265, Grade 3	63
Alvac 40	102	AMS 4930A	719	ASTM B265, Grade 3	66
Alvac 55	69	AMS 4934	695	ASTM B265, Grade 4	46
Alvac 52.5	544	AMS 4935C	694	ASTM B265, Grade 4	39
Alvac 62.1.8	580	AMS 4936	726	ASTM B265, Grade 5	687
Alvac 62.4.2+Si*	609	AMS 4941A	105	ASTM B265, Grade 5	711
Alvac 62.4.2	600	AMS 4942	104	ASTM B265, Grade 6	533
Alvac 62.4.6	614	AMS 4943	370	ASTM B265, Grade 6	517
Alvac 64	699	AMS 4944	368	ASTM B265, Grade 7	893
Alvac 64.3*	714	AMS 4951C	2	ASTM B265, Grade 7	911
Alvac 6.6.2	739	AMS 4953	541	ASTM B299	282
Alvac 70	41	AMS 4954B	700	ASTM B299, GP 1	283
Alvac 8.1.1	783	AMS 4955	799	ASTM B299, MD 120	285
Alvac 50	61	AMS 4956	717	ASTM B299, ML 120	284
AlMoSn 4.4.2	430	AMS 4965C	705	ASTM B299, SL 120	286
AlMoV 8.1.1	783	AMS 4966E	537	ASTM B337, Grade 10	871
AlMoV 8.1.1	803	AMS 4967D*	686	ASTM B337, Grade 10	874
AlMo 74	758	AMS 4968A*	499	ASTM B337, Grade 11	889
AlMo 74	761	AMS 4969*	563	ASTM B337, Grade 11	887

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1 (Continued)

ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.
ASTM B337, Grade 1	135	ASTM B367, Grade C-6	553	AT3 V	402
ASTM B337, Grade 1	134	ASTM B367, Grade C-7A	925	AT4	481
ASTM B337, Grade 2	99	ASTM B367, Grade C-7A	931	AT6	747
ASTM B337, Grade 2	106	ASTM B367, Grade C-7B	930	AT8	776
ASTM B337, Grade 3	75	ASTM B367, Grade C-7B	926	AT	477
ASTM B337, Grade 3	77	ASTM B367, Grade C-8A	927	AT 3 1	344
ASTM B337, Grade 7	905	ASTM B367, Grade C-8A	929	AT 3 2	343
ASTM B337, Grade 7	902	ASTM B367, Grade C-8B	932	AT 4 N	407
ASTM B337, Grade 9	365	ASTM B367, Grade C-8B	928	AT 4 S	408
ASTM B337, Grade 9	360	ASTM B381, Grade F 11	129	AT 4 V	488
ASTM B338, Grade 10	868	ASTM B381, Grade F 1	3	AT 6 V	754
ASTM B338, Grade 10	880	ASTM B381, Grade F 1	171	AT 8 N	753
ASTM B338, Grade 11	913	ASTM B381, Grade F 2	174	AT 9 S	755
ASTM B338, Grade 11	894	ASTM B381, Grade F 2	4	Avesta AT1 Pd	934
ASTM B338, Grade 1	132	ASTM B381, Grade F 3	5	Avesta AT1, 24 Pd	921
ASTM B338, Grade 1	136	ASTM B381, Grade F 3	172	Avesta AT1, 24	151
ASTM B338, Grade 2	100	ASTM B381, Grade F 4	173	Avesta AT1, 30	137
ASTM B338, Grade 2	116	ASTM B381, Grade F 4	6	Avesta AT1, 35	108
ASTM B338, Grade 3	72	ASTM B381, Grade F 5	704	Avesta AT1, 45	209
ASTM B338, Grade 3	76	ASTM B381, Grade F 5	708	A 18	522
ASTM B338, Grade 7	898	ASTM B381, Grade F 5	710	A 1	8
ASTM B338, Grade 7	903	ASTM B381, Grade F 6	534	A 110AT	538
ASTM B338, Grade 9	363	ASTM B381, Grade F 6	507	A 35	177
ASTM B338, Grade 9	364	ASTM B381, Grade F 6	515	A 40	118
ASTM B348, Grade 10	877	ASTM B381, Grade F 7	918	A 55	56
ASTM B348, Grade 11	897	ASTM B381, Grade F 7	915	A 55	57
ASTM B348, Grade 1	139	ASTM B381, Grade F 7	910	A 70	205
ASTM B348, Grade 2	98	ASTM F136	631	A 70	44
ASTM B348, Grade 3	67	ASTM F136	626	A 75	182
ASTM B348, Grade 4	33	ASTM F67, Grade 3	40	BA TA 25	321
ASTM B348, Grade 5	697	ASTM F67, Grade 4	62	BA TA 26	320
ASTM B348, Grade 6	543	AT1 Pd	934	BA TA 27	322
ASTM B348, Grade 7	901	AT1, 24 Pd	921	BA 2 TA 24	835
ASTM B363, Grade WP T2	268	AT1, 24	151	BA 2 TA 28	656
ASTM B363, Grade WP T2	264	AT1, 30	137	Beta III	878
ASTM B363, Grade WP T3	266	AT1, 35	108	Beta III	866
ASTM B363, Grade WP T3	269	AT1, 45	209	Blackwell's Titanium	17
ASTM B363, Grade WP T1	265	AT1, 45	190	BS CP 3003 Part 9, Grade 1	30
ASTM B363, Grade WP T1	267	ATN	304	BS CP 3003 Part 9, Grade 2	27
ASTM B367, Grade C 1	143	AT1 ISV	176	BS CP 3003 Part 9, Grade 3	45
ASTM B367, Grade C 1	142	AT1 ZSV	175	BS CP 3003 Part 9, Grade 4	31
ASTM B367, Grade C 2	123	AT2	305	BS CP 3003 Part 9, Grade 5	26
ASTM B367, Grade C 2	122	AT2 1	956	BS CP 3003 Part 9, TP 1	919
ASTM B367, Grade C 3	84	AT2 2	858	BS TA 10	639
ASTM B367, Grade C 3	82	AT2 3	957	BS TA 11	638
ASTM B367, Grade C 4	48	AT2 4	959	BS TA 12	637
ASTM B367, Grade C 4	49	AT3N	331	BS TA 13	640
ASTM B367, Grade C 5	712	AT3V	401	BS TA 14	519
ASTM B367, Grade C 5	713	AT3	399	BS TA 15	518
ASTM B367, Grade C 6	552	AT3SV	358	BS TA 16	523

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1 (Continued)

ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.
BS TA 18**	325	BS 2TA.9	160	Continet 35	95
BS TA 19**	324	BS 3531/1.5	52	Continet 55	81
BS TA 19.1	165	BS 3531/1.5	36	Continet 55	58
BS TA 20	323	B-120VCA	387	Continet 685	571
BS TA 28	641	Carlson C-30Pd	942	Continet 685	575
BS TA 29	452	Carlson C-40Pd	941	CP 3003 Part 29, TP 1	919
BS TA 30	431	Carlson C-55Pd	937	CP 3003 P/9 Grade 4	31
BS TA 31	432	Carlson C-6Al-4V	147	CP 3003 P/9 Grade 5	26
BS TA 32	435	Carlson 30	147	CP 3003 P/9 Grade 1	30
BS TA 33	440	Carlson 40	112	CP 3003 P/9 Grade 2	27
BS TA 34	443	Carlson 55	68	CP 3003 P/9 Grade 3	45
BS TA 35	444	Carlson 70	47	Crucible A-110AT	538
BS TA 36	445	Carpenter Titanium 6.4	703	Crucible A-40	118
BS TA 37	442	Carpenter Titanium 6.4*	660	Crucible A-55	56
BS TA 38	963	Carpenter Titanium 6.6.2	732	Crucible A-70	205
BS TA 39	962	Carpenter Titanium 6.6.2*	723	Crucible A-70	44
BS TA 40	964	CC Type	10	Crucible Beta III	878
BS TA 41	965	Commercial Purity	55	Crucible B-120VCA	387
BS TA 42	961	Commercial Purity	263	Crucible C-110M	852
BS TA 43	569	Commercial Purity	170	Crucible C-120AV	702
BS TA 44	570	Commercial Purity	128	Crucible C-130AM	415
BS TA 45	449	Commercial Purity	88	Crucible C-135AMO	770
BS TA 46	441	Continet AlMoSn 4.4.2	430	Crucible TI 0 15Pd	906
BS TA 47	439	Continet AlMoV 8.1.1	783	Crucible 3A12.5V	362
BS TA 48	438	Continet AlMoV 8.1.1	803	Crucible 6Al2Sn-4Zr-2Mo	603
BS TA 49	434	Continet AlMo 74*	758	Crucible 8Al-1Mo-1V	786
BS TA 50	446	Continet AlMo 74	761	CSN 42 4655	969
BS TA 51	436	Continet AlSnZrMo 6.2.4.2	611	CS Type	12
BS TA 52	836	Continet AlSnZrMo 6.2.4.2	607	Cu 2	819
BS TA 53	839	Continet AlSn 52 ELI	509	Cu 2	844
BS TA 54	843	Continet AlSn 52	504	C-110M	852
BS TA 55	846	Continet AlSn 52	512	C-120AV	702
BS TA 56	676	Continet AlVSn 6.6.2	567	C-130AM	415
BS TA 57	448	Continet AlV 64 ELI	634	C-135AMO	770
BS TA 58	842	Continet AlV 64	679	C-30	147
BS 2TA 10	666	Continet AlV 64	680	C-30Pd	942
BS 2TA 11	668	Continet Cu 2	844	C-40	112
BS 2TA 12	667	Continet Cu 2	819	C-40Pd	941
BS 2TA 13	664	Continet Pd 02/30	923	C-55	68
BS 2TA 1	158	Continet Pd 02/30	907	C-55/Pd	937
BS 2TA 21	840	Continet Pd 02/35D	920	C-6Al-4V	675
BS 2TA 22	837	Continet Pd 02/35D	909	C-70	47
BS 2TA 23	838	Continet Pd 02/35	922	Degussa Ti Powder	22
BS 2TA 2	157	Continet Pd 02/35	908	DIN 17850, 4 CP Grades	181
BS 2TA 3	155	Continet VC/Al 13.11.3	386	DIN 17850, 4 CP Grades	506
BS 2TA 4	156	Continet 30	175	DIN 17850, 4 CP Grades	682
BS 2TA 5	159	Continet 30	93	DIN 17860, 4 CP Grades	528
BS 2TA 6	162	Continet 35D	89	DIN 17860, 4 CP Grades	655
BS 2TA 7	163	Continet 35D	85	DIN 17860, 4 CP Grades	252
BS 2TA 8	161	Continet 35	92	DIN 17862, 4 CP Grades	527

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1 (Continued)

ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.	ALLOY DESIGNATION	INDEX NO.
DIN 17862, TiAl6V4	658	DTD 5303	649	Hylite 48*	326
DIN 17862, 4 CP Grades	251	DTD 5313	663	Hylite 50*	455
DIN 17862, 4 CP Grades	179	DTD 5333	450	Hylite 51*	460
DIN 17863, 4 CP Grades	180	DTD 5343	453	Hylite 55*	355
DIN 17864, TiAl5Sn2	520	DTD 5353	447	Hylite 60*	349
DIN 17864, TiAl6V4	651	Ductile Ti	212	Hylite 65*	348
DIN 17864, 4 CP Grades	178	Dynaplat Pd 02/03	914	H Ti 18	169
DIN 37025***	164	Dynaplat 30	216	H Ti 24	131
DIN 37030***	949	Eltanit AB 102*	814	H Ti 72	166
DIN 37035	152	Eltanit AB 104	861	IMI-EX 68*	292
DIN 37040***	946	Eltanit AB 105*	955	IMI-115	195
DIN 37055***	144	Eltanit AB 106*	849	IMI-125	113
DIN 37066***	948	Eltanit AB 203*	566	IMI-130	215
DIN 37065	126	Eltanit AB 207*	423	IMI-130	270
DIN 37070***	947	Eltanit AB 209*	650	IMI-130	271
DIN 37115	529	Eltanit AB 210*	757	IMI-155	201
DIN 37165	659	Eltanit A 16	522	IMI-160	7
DTD M159*	290	Eltanit A 1	8	IMI-205*	881
DTD M160*	289	EMO Ti 110	141	IMI-230	833
DTD M200*	746	EMO Ti 140	153	IMI-260	944
DTD M201*	612	EP 202	805	IMI-261	945
DTD 50038*	146	EP 90-10	817	IMI-314*	416
DTD 50136*	192	EX-684	292	IMI-315	308
DTD 50236*	150	Fuchs TA 44	428	IMI-317	536
DTD 50338*	149	Fuchs TA 52	503	IMI-318	707
DTD 50438*	310	Fuchs TA 64	671	IMI-318	649
DTD 5053	420	Fuchs TA 66	734	IMI-318	663
DTD 5063A*	148	Fuchs TA 74	763	IMI-550	447
DTD 5073	241	Fuchs TC 2	820	IMI-550	450
DTD 5083	548	Fuchs TP 02	943	IMI-550	453
DTD 5093	549	Fuchs T 2	119	IMI-550	454
DTD 5103	456	Fuchs T 3	96	IMI-551	461
DTD 5113	328	Fuchs T 6	79	IMI-679	319
DTD 5123*	831	Gr. NDA	145	IMI-681	338
DTD 5133*	830	HA 8116	782	IMI-684	744
DTD 5143*	419	HA-Ti-0.15Pd*	900	IMI-685	574
DTD 5153	433	HA-1940Pd*	899	IMI-700*	613
DTD 5163*	646	HA-5158	737	IMP-10	398
DTD 5173*	645	HA-7146*	762	IMP-1	884
DTD 5183	240	HMH 55	121	IMP-6-1	847
DTD 5193*	239	HMH 75	28	IMP-6-2	346
DTD 5203*	458	Hylite 10	20	IMP-7	359
DTD 5213*	336	Hylite 15H*	18	IMP-9	475
DTD 5223*	459	Hylite 15*	19	IRM1	405
DTD 5233*	827	Hylite 1*	21	IRM2	406
DTD 5243*	829	Hylite 20*	535	IRM3	427
DTD 5253*	828	Hylite 25*	832	IRM4*	404
DTD 5263*	826	Hylite 30*	309	IRM5*	410
DTD 5273	271	Hylite 40*	417	IRM6*	424
DTD 5283	270	Hylite 45*	698	IRM7*	559

* Noncurrent alloy.

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IV-T-1	350	MIL-F-83142 A, Composition 9	1023	MIL-T-009047F, Composition 9	1021
JK 183 122	971	MIL-F-83142 A, Composition 10	982	MIL-T-009047F, Composition 10	961
Koch-Light H Ti 18	169	MIL-F-83142 A, Composition 11	1017	MIL-T-009047F, Composition 11	1016
Koch-Light H Ti 24	131	MIL-F-83142 A, Composition 12	985	MIL-T-009047F, Composition 12	984
Koch-Light H Ti 72	166	MIL-F-83142 A, Composition 13	1032	MIL-T-009047F, Composition 13	1031
Krupp 12	219	MIL-R-81588, Type I, Composition A	991	MIL-T-009047F, Composition 14	1020
Krupp 15	243	MIL-R-81588, Type I, Composition B	991	MIL-T-13405C, Ti Powder	979
Krupp 18S	224	MIL-R-81588, Type II, Composition A	997	MIL-T-46035, ELI	1033
KS 50	250	MIL-R-81588, Type II, Composition B	997	MIL-T-46035, LI	1034
KS 70	249	MIL-R-81588, Type II, Composition C	1029	MIL-T-46035, NI	1035
LT 21 TiAl5Sn2.5	513	MIL-R-81588, Type II, Composition D	578, 1014	MIL-T-46038B, ELI	1036
LT 22 TiAl8Mo1V1	789	MIL-R-81588, Type III, Composition A	392, 1005	MIL-T-46038B, LI	1037
LT 23 TiAl5Sn5Zr5	554	MIL-R-81588, Type III, Composition B	1010	MIL-T-46038B, NI	1038
LT 24 TiAl5Sn2Zr4Mo2	606	MIL-R-81588, Type IV, Composition A	986	MIL-T-46077B	999
LT 25 TiCu2	825	MIL-T-9046H, Type I, Composition A	115	MIL-T-81556, Type I, Composition A	114
LT 26 TiAl6Zr5MoSi	588	MIL-T-9046H, Type I, Composition B	42	MIL-T-81556, Type I, Composition B	65, 977
LT 31 TiAl6V4	654	MIL-T-9046H, Type I, Composition C	74	MIL-T-81556, Type I, Composition C	43
LT 32 TiAl7Mo4	768	MIL-T-9046H, Type II, Composition A	540	MIL-T-81556, Type I, Composition D	531, 990
LT 33 TiAl6V6Sn2	733	MIL-T-9046H, Type II, Composition B	624	MIL-T-81556, Type II, Composition A	500, 996
LT 34 TiAl4Mo4Sn2	451	MIL-T-9046H, Type II, Composition F	702	MIL-T-81556, Type II, Composition B	796, 1028
LT 41 TiV13Cr11Al3	383	MIL-T-9046H, Type II, Composition G	581	MIL-T-81556, Type III, Composition C	690, 1003
L-7001, Ti-99.5	120	MIL-T-9046H, Type III, Composition C	673	MIL-T-81556, Type III, Composition B	627, 1009
L-7002, Ti-99.3	90	MIL-T-9046H, Type III, Composition D	630	MIL-T-81556, Type III, Composition C	724, 1014
L-7003, Ti-99.2	59	MIL-T-9046H, Type III, Composition E	728	MIL-T-81556, Type III, Composition D	578, 1024
L-7004, Ti-99.0	25	MIL-T-9046H, Type III, Composition G	608, 597	MIL-T-81915, Type I, Composition A	976
L-7021, Ti-99.3 Pd	891	MIL-T-9046H, Type III, Composition H	632	MIL-T-81915, Type II, Composition A	995
L-7101, Ti-6Al-2.5Sn	502	MIL-T-9046H, Type IV, Composition A	391	MIL-T-81915, Type III, Composition A	1004
L-7301, Ti-6Al-4V	665	MIL-T-9046H, Type IV, Composition B	870, 867	MIL-T-81915, Type III, Composition B	1018
L-7501, Ti-2.5Cu	845	MIL-T-9046H, Type IV, Composition C	376, 377	MMA-1940	231
L-7701, Ti-3Al-13V-11Cr	387	MIL-T-9046H, Type IV, Composition D	381	MMA-1942	904
LW 37114	530	MIL-T-9047E, Composition 1	972	MMA-1950	230
LW 37124	834	MIL-T-9047E, Composition 2	987	MMA-1970	229
LW 37134	785	MIL-T-9047E, Composition 3	992	MMA-3138	367
LW 37144	602	MIL-T-9047E, Composition 5	1025	MMA-5137	525
LW 37154	589	MIL-T-9047E, Composition 6	1000	MMA-5158	737
LW 37174	740	MIL-T-9047E, Composition 7	1006	MMA-6246	617
LW 37184	429	MIL-T-9047E, Composition 8	1011	MMA-6510	672
LW 37024 Werkstoff	235	MIL-T-9047E, Composition 9	1021	MMA-7146	762
LW 37034 Werkstoff	237	MIL-T-9047E, Composition 10	980	MMA-8116	782
LW 37064 Werkstoff	236	MIL-T-9047E, Composition 11	1015	MMA-9744	605
LW 37164	683	MIL-T-9047E, Composition 12	983	MST Alloys (See RMI List)	967
MGMTS	856	MIL-T-9047E, Composition 13	1030	MST 881	804
MIL-F-83142 A, Composition 1	974	MIL-T-9047E, Composition 14	1019	M.D. 301	86
MIL-F-83142 A, Composition 2	969	MIL-T-009047F, Composition 1	973	M.D. 68	15
MIL-F-83142 A, Composition 3	984	MIL-T-009047F, Composition 2	988	OMC Ti-3Al-2.5V	354
MIL-F-83142 A, Composition 4	998	MIL-T-009047F, Composition 3	993	OMC Ti-40	103
MIL-F-83142 A, Composition 5	1027	MIL-T-009047F, Composition 5	1026	OMC Ti-5Al-2.5V	516
MIL-F-83142 A, Composition 6	1002	MIL-T-009047F, Composition 6	1001	OMC Ti-6Al-2Sn-4Zr-2Nb	599
MIL-F-83142 A, Composition 7	1008	MIL-T-009047F, Composition 7	1007	OMC Ti-6Al-4V	684
MIL-F-83142 A, Composition 8	1073	MIL-T-009047F, Composition 8	1011		

• Noncurrent alloy.

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OMC Ti-6Al-6V-2Sn	725	Pd 02/35	908	RS-100*	289
OMC Ti-7Al-4Mo	767	Pd 02/35	922	RS-110A*	851
OMC Ti-8Al-1Mo-1V	800	PI	274	RS-110B*	333
OMC Pd	933	PKHM3 TG	277	RS-110C*	479
OMC Ti-1Al-8V-5Fe*	296	Pure Titanium	9	RS-110	816
OMC Ti-11Sn-5Zr-2.5Al-1Mo-0.25Si	334	Republic RS-100*	289	RS-115*	463
OMC Ti-11	584	Republic RS-110A*	851	RS-120A*	661
OMC Ti-11.5Mo-6Zr-4.5Sn	865	Republic RS-110B*	333	RS-120	850
OMC Ti-13V-11Cr-3Al	390	Republic RS-110C*	479	RS-130	418
OMC Ti-17	488	Republic RS-110	816	RS-135	771
OMC Ti-2Al-11V-2Sn-11Zr	315	Republic RS-115*	463	RS-135*	760
OMC Ti-2Cu	821	Republic RS-120A*	661	RS-140X*	491
OMC Ti-3Al-8V-6Cr-4Mo-4Zr*	378	Republic RS-120*	850	RS-140X*	489
OMC Ti-4Al-3Mo-1V	465	Republic RS-130*	418	RS-40*	107
OMC Ti-5Al-1.5Cr-1.5Fe-1Mo*	493	Republic RS-135*	771	RS-55*	73
OMC Ti-5Al-2Zr-2Sn-4Mo-4Cr	498	Republic RS-135*	760	RS-6Al-4V*	681
OMC Ti-5Al-2.75Cr-1.25Fe	490	Republic RS-140X*	489	RS-70*	32
OMC Ti-5Al-5Sn-3Zr	555	Republic RS-140X*	491	RS-811X*	780
OMC Ti-5Al-6Sn-2Zr-1Mo-0.25Si	494	Republic RS-40*	107	RT 12(Pd)	940
OMC Ti-6Al-2Cb-1Ta-0.8Mo	582	Republic RS-55*	73	RT 15(Pd)	939
OMC Ti-6Al-2Sn-1.5Zr-1Mo-0.36B-0.25Si	584	Republic RS-6Al-4V*	681	RT 18(Pd)	936
OMC Ti-6Al-2Sn-4Zr-2Mo-5Si-0.2	610	Republic RS-70*	32	RT 20	211
OMC Ti-6Al-2Sn-4Zr-6Mo	618	Republic RS-811X*	780	Sandvik Titanium 20	1
OMC Ti-6Al-2Zr-2Sn-2Mo-2Cr-0.25Si	592	Resilient Ti	210	Sandvik Titanium 9	193
OMC Ti-679	334	RMI 02Pd	892	ST 40	248
OMC Ti-7Al-12Zr*	775	RMI 02Pd	288	ST 50	247
OMC Ti-8Al-2Cb-1Ta*	778	RMI 1Al-8V-5Fe	295	ST 60	246
OMC Ti-8Mo	848	RMI 13V-11Cr-3Al	383	ST 70	245
OMC Ti-8Mo-8V-2Fe-3Al*	379	RMI 2Cu	822	ST 80	244
OMC VCA	386	RMI 3Al-2.5V	352	TAV13Ca	385
OMC VCA	380	RMI 3Al-8V-6Cr-4Mo-4Zr	374	TA2M	311
OMC 103 (Casting)	935	RMI 38.6.44	374	TA3V2.5	371
OMC 105 (Casting)	34	RMI 4Al-3Mo-1V	472	TA3V	361
OMC 164B (Casting)	689	RMI 40	101	TA4DE	457
OMC 166A (Casting)	508	RMI 5Al-2.5Sn	542	TA4D3V	469
OMC 55	64	RMI 5Al-5Sn-2Zr-2Mo-Si	496	TA4M	412
OM 42 4656	970	RMI 55	71	TA4M	414
OMC-70	37	RMI 6Al-2Cb-1Ta-0.8Mo	579	TA4M	421
OT4	347	RMI 6Al-2Sn-2Zr-2Mo-2Cr-Si	593	TA4M	411
OT4	341	RMI 6Al-2Sn-4Zr-2Mo	594	TA5E L Grade	511
OT4 K	307	RMI 6Al-2Sn-4Zr-6Mo	616	TA5E	510
OT4 O	293	RMI 6Al-4V	688	TA5E	547
OT4 I	301	RMI 6Al-6V-2Sn	730	TAGAZ5W	745
OT4 I	306	RMI 6Zr22S	593	TAGV4K3	715
OT4 Z	743	RMI 7Al-12Zr	773	TAGV6Sn2	742
OT5	330	RMI 7Al-4Mo	764	TAGV	643
Pd 02/03	907	RMI 70	35	TAGV	670
Pd 02/30	923	RMI 8Al-1Mo-1V	794	TAGV	674
Pd 02/35D	920	RMI 8Mo	853	TAGV	685
Pd 02/35D	909	RMI 6Al-2Cb-1Ta-1Mo	577	TAGZDE	596

* Noncurrent alloy.

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TA6ZD	573	TA 48	438	Titanium RT 20	211
TA6Zr4DE	598	TA 49	434	TiL 100 Grade 2A	203
TA6Zr5D	576	TA 50	446	TiL 100 Grade 3	200
TA6ZW	561	TA 51	436	TiL 100 Grade 3	202
TA6ZSD	587	TA 52	836	TiL 110 Grade 6	526
TA7D	766	TA 53	839	TiL 110 Grade 5	657
TA7O	759	TA 54	843	TiL 120 Grade 8	938
TA8DV	798	TA 55	846	Ti-13V-11Cr-3Al	357
TA8DV	788	TA 56	676	Titanium EP 20-2	805
TA8DV	781	TA 57	448	Titanium EP 90-10	817
TA 44	428	TA 58	842	Titanium GR, NDA	145
TA 52	503	TC 2	820	Titanium Hydride Powder	287
TA 64	671	TC	824	Titanium Powder Grade CC	13
TA 66	734	TD12ZrE	873	Titanium Powder Grade Z	14
TA 74	763	TEL Ti 6Al 4V	701	Titanium 1A19V 5Fe	295
TA 10*	639	TE11DA	337	Titanium 20	1
TA 11*	638	TG 00	154	Titanium 6Al 4V ELI	968
TA 12*	637	TG 0	280	Titanium 6Al 4V	966
TA 13*	640	TG 1000P	281	Titanium 6-4	703
TA 14*	519	TG 1050P	279	Titanium 6-6-2	723
TA 15*	518	TG 110	278	Titanium 9	193
TA 16*	523	TG 1130P	276	Titanium	17
TA 17*	524	TG 118	275	Titanium	54
TA 18**	325	TG 130	273	Titanium-AA	124
TA 19*	324	TG 140	258	Titanium-A	53
TA 1*	165	TG 155	259	Titanium-115	195
TA 20**	323	TG 170	262	Titanium-125	113
TA 25	321	TG 190	261	Titanium-130	215
TA 26	320	TG 1-3	272	Titanium-155	201
TA 27	322	TG 2	87	Titanium-160	7
TA 28*	641	TA15Sn2	520	Titanium-205*	881
TA 29*	452	TA15Sn2	506	Titanium-230	833
TA 30*	431	TA16V4	682	Titanium-314*	416
TA 31*	432	TA16V4	655	Titanium-315	308
TA 32*	435	TA16V4	658	Titanium-317	536
TA 33*	440	TA16Vr	651	Titanium-318	707
TA 34*	443	Tikutan LT 21	513	Titanium-550	454
TA 35*	444	Tikutan LT 22	789	Titanium-551	461
TA 36*	445	Tikutan LT 23	554	Titanium-679	319
TA 37*	442	Tikutan LT 24	506	Titanium-680	338
TA 38	963	Tikutan LT 25	825	Titanium 684	744
TA 39	962	Tikutan LT 26	588	Titanium 685*	574
TA 40	964	Tikutan LT 31	654	Titanium-700*	613
TA 41	965	Tikutan LT 32	768	TITECH 0.2Pd	912
TA 42	961	Tikutan LT 33	733	Ti P 01	238
TA 43	569	Tikutan LT 34	451	Ti P 02	233
TA 44	570	Tikutan LT 41	383	Ti P 04	234
TA 45	449	Tikutan RT 12(Pd)	940	Ti P 05	257
TA 46	441	Tikutan RT 15(Pd)	939	Ti P 11	841
TA 47	439	Tikutan RT 18(Pd)	936	Ti P 62	421

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1 (Continued)

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Ti-P 63	662	Ti-5Al-2.5Sn ELI	501	TP 02	943
Ti-P 64	738	Ti-5Al-2.5Sn	539	Transage 129(Experiment)	314
Ti-P 65	505	Ti-5Al-2.5Sn	521	TS1	356
Ti-P 66	784	Ti-5Al-2.5Sn-2.5V-1Cb-1T	558	TS2	462
Ti-P 67	572	Ti-5Al-2.75Cr-1.25Fe	490	TS5	557
Ti-P 68	437	Ti-5Al-4FeCr	487	TS6	372
Ti-Al	342	Ti-5Al-5Sn-5Zr	556	TTC 208 Casting	191
Ti-Al-V	636	Ti-5Al-5Sn-5Zr	555	TTC 228 Casting	896
Ti-Brush 120-AM	413	Ti-5Al-6Sn-2Zr-Mo-Si	495	TTC 23 Investment Casting	635
Ti-Brush 40	217	Ti-5Al-6Sn-2Zr-1Mo	494	TTC 308 Casting	644
Ti-Brush 50	809	Ti-50A	97	TTC 31B Casting	642
Ti-Brush 65A	303	Ti-55	78	TTC 33A Casting	648
Ti-CO	813	Ti-55A	218	TTC 34 Casting	647
Ti-LOY 90	677	Ti-6Al-2Cb-1Ta-0.8Mo	583	TUV 230-168 Group III	91
Ti-LOY 92	514	Ti-6Al-2Cb-1Ta-0.8Mo	582	TUV 230-168 Group II	94
Ti-LOY 99	16	Ti-6Al-2Mo-2Sn-2Zr-2Cr-Si	592	TUV 230-168 Group IV	80
Ti-Mo	864	Ti-6Al-2Sn-4Zr-2Mo	620	TUV 230-168 Group I	140
Ti-Ni	886	Ti-6Al-2Sn-4Zr-2Mo-Si	610	TU2	823
Ti-P7	951	Ti-6Al-2Sn-4Zr-6Mo	618	Type A 35	177
Ti-V	958	Ti-6Al-2Sn-4Zr-8Mo	621	Type A 55	57
Ti-Zr	808	Ti-6Al-2Sn-6Mo-4Zr	619	Type A 75	182
Ti-Zr-Fe-Mo	863	Ti-6Al-4V ELI	628	T3M*	862
Ti-0.15Pd	950	Ti-6Al-4V ELI	629	T35	222
Ti-0.20Pd	895	Ti-6Al-4V	691	T35	225
Ti-1Al-6V-5Fe*	296	Ti-6Al-4V	652	T35	197
Ti-100A	23	Ti-6Al-4V	653	T35-02	916
Ti-11	585	Ti-6Al-4V-3Co	716	140R	223
Ti-11.5Mo-6Zr-4.5Sn	865	Ti-6Al-6V-25Sn	729	T40	221
Ti-13V-1Cr-3Al	386	Ti-6Al-6V-25Sn	735	T40	199
Ti-13V-11Cr-3Al	389	Ti-6Co	812	T40	228
Ti-140A*	859	Ti-65A	70	T443*	395
Ti-150A*	815	Ti-679	318	T50	220
Ti-155A*	565	Ti-6.5Al-2Cb-1Ta	748	T50	232
Ti-17	487	Ti-7Al-12Zr	774	T50	227
Ti-2Al-11V-25Sn-11Zr	315	Ti-7Al-12Zr*	775	T60	226
Ti-2Cu*	821	Ti-7Al-2Cb-1Ta	752	T60	242
Ti-2Ni	885	Ti-7Al-4Mo	765	T60	204
Ti-20Cr	818	Ti-70	29	T6242	604
Ti-20Nb-10Ta	810	Ti-75A	24	T651A	586
Ti-280	944	Ti-8Al-1Mo-1V	801	T662	736
Ti-261	945	Ti-8Al-1Mo-1V	787	T684	960
Ti-3Al-2.5V	369	Ti-8Al-10V	802	T685*	568
Ti-3Al-8V-6Cr-4Mo-4Zr*	378	Ti-8Al-2Cb-1Ta	779	T713*	312
Ti-30Al-10Nb	806	Ti-8Al-2Cb-1Ta*	778	T 2	119
Ti-35Al	807	Ti-8Mn	854	T 3	96
Ti-35A	130	Ti-8Mo*	848	T 6	79
Ti-4Al-3Mo-1V	474	Ti-8Mo-8V-2Fe-3Al	382	T 992	254
Ti-4Al-3Mo-1V*	465	Ti-8Mo-8V-2Fe-3Al*	379	T 993	253
Ti-45-A	208	Ti-8Si	952	T 994	255
Ti-5Al-1.5Cr-1.5Fe-1Mo*	493	Ti-99	260	T 995	256

* Noncurrent alloy.

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TA2M	311	UT50	232	VT6L	720
TA3V25	371	UT60	204	VT6S	706
TA4DE2	38	UT6242	604	VT6	709
TA4DE	457	UT651A	586	VT7	291
TA4D3V	469	UT662	736	VT8	772
TA4M	414	UT684	960	VT9L	749
TA5E	547	UT685	568	VT9	750
TA6V+2Z6	623	VCRAI 13 11-3	396	VT 10	206
TA6Ve	741	Ventron Pure Titanium	9	VT 10 2	207
TA6V4K3	715	Ventron 88393, 65 35	807	VT 10	564
TA6V4	669	Ventron 88394, 60 30 10	806	W 35A	186
TA6V6E2Zr	622	Ventron 88395, 90 6 4	818	W 50A	185
TA6V	695	Ventron 88396, 80 20	812	W 65A	183
TA6ZDE	596	Ventron 88397, 94 6	810	W 80A	184
TA6ZD	573	Ventron 88398, 70 20 10	810	Z Type	11
TA6Z4DE	598	Ventron 88399, 92 8	952	1T	378
TA6Z75D	576	VTL 1	486	120 AM	413
TA6ZW	561	VT10 1	188	12	219
TA6Z5D	587	VT1L	213	13-11 33	388
TA6Z5W	745	VT12	426	15	243
TA7DE	756	VT13	425	18S	224
TA7	766	VT14L	473	2TA 10	666
TA8DV	788	VT14M	480	2TA 11	668
TD11Z6E4	876	VT14	467	2TA 12	667
TD8C6DZHA	375	VT14	468	2TA 13	664
TE11DA	337	VT14(A)	464	2TA 1	158
TH3V2 5	363	VT14(B)	466	2TA 21	840
TU2	823	VT14 1	313	2TA 22	837
TV13CA	365	VT15M	339	2TA 23	838
TV13C11A	364	VT15	351	2TA 24	835
T 35	225	VT16	340	2TA 28	656
T 40	228	VT18	777	2TA 2	157
T 50	227	VT1	214	2TA 3	155
T 60	226	VT1 100	168	2TA 4	156
Ugine 35	198	VT1 0	167	2TA 5	159
Ugine 40	111	VT1 1	189	2TA 6	162
Ugine 50	60	VT1 2	187	2TA 7	163
UTA3V	361	VT20	751	2TA 8	161
UTASE L Grade	511	VT21L	625	2TA 9	160
UTA5E	510	VT22	560	2T	335
UTA6V6Sr2	742	VT2	298	3A1 2 5V	362
UTA6V	643	VT3	482	3T	302
UTA7D	759	VT3	482	30	93
UTA8DV	781	VT3-1L	590	35	125
UTA8DV	798	VT3 1	591	35D	85
UTC	824	VT4	409	35D	89
UT 35	197	VT5D	485	36	198
UT 35 02	916	VT5L	484	36	95
UT 40R (Special Rivet Gr)	223	VT5	483	36	92
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• Noncurrent alloy.

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4T	300
40	111
4200	917
4201	883
4203	882
4204	953
48T7*	317
48-OT3	403
48 T2	329
48 T3	400
48 T4*	476
48 T5*	478
48 T6*	954
5T	297
50	60
555	81
55	58
6Al-2Sn-4Zr-2Mo	603
65A	303
685	575
685	571
6.6.2	739
8Al-1Mo-1V	786

* Noncurrent alloy.

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BATTELLE COLUMBUS LABORATORIES Date _____

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Receipt of MCIC-HB-09, Vol. I, "Handbook of International Alloy Compositions and Designations, Volume I-Titanium", is hereby acknowledged. The name and address of the person maintaining this Handbook is as follows:

Name _____

Organization _____

Address _____

Comments: _____

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